Warren, Edgar L.

... A practical treatise on egg making and its conditions and profits in poultry.

Wolfeboro, N.H., 1900.

200 Eggs a Year Per Hen: How To Get Them.

Price 50 Cents.

PUBLISHED BY
EDGAR L. WARREN, Wolfeboro, N. H.
1900.

EGGS FOR HATCHING.

Will Condition Powder Affect the Fertility of Eggs for Hatching?

On this point M. K. Boyer, of Farm-Poultry, says he has repeatedly experimented. He, too, like some others, at one time charged condition powders with producing infertile eggs, but the trials made with Sheridan's Condition Powder have fully convinced him that by its use the stock are strengthened and made more vigorous, and such a condition is bound to not only produce strong fertile eggs, but hardy chicks. (Read test case below.)

A TEST CASE.

FANNY FIELD, in Farm-Poultry, July, 1895, says:—

Of course you want to know how the hatching of eggs from my hens, "encouraged" by Sheridan's Condition Powder, turned out, and how the chicks are coming on; and I am as eager to tell as you are to hear. Up to date (July 1) I set one hundred and ninety-four eggs; one hundred and fifty-three hatched, and there are yet twenty-five to hear from. Every chick came from the shell strong and well. We have lost twenty-three, but only one by sickness. Three were crushed by the mother hens, two strayed off in the wet grass after a rain, and died from the effects of the chill, the hawks took five, and skunks gobbled an even dozen.

[NOTE.—It looks as though the Sheridan's Condition Powder improved, rather than injured, the fertility of the eggs, judging from the above test case.]

No Matter What Kind of Foods You Use!

Sheridan's Condition Powder

is needed with it to assure perfect assimilation of the food elements necessary to produce eggs. It is absolutely pure; highly concentrated; most economical, because such small doses; in quantity costs less than one-tenth cent a day per hen. Use freely when hens are laying eggs for hatching.

Sold by Druggists, Grocers and Feed Dealers, or sent by mail. Large cans most economical to buy.

IF YOU CAN'T GET IT NEAR HOME SEND TO US. ASK FIRST.

We send one package, 25c.; five, $1.00. A two-pound can, $1.20; Six, $5.00. Express paid. Sample copy "best Poultry paper" sent free.

I. S. JOHNSON & CO., 22 Custom House St., Boston, Mass.

REVISED EDITION.

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THE TWO HUNDRED EGG HEN.

We live in a competitive age. Business of all kinds is overdone. It is much harder to make a success to-day than it was 10 years ago, and it will be much harder 10 years hence than it is now. The men who succeed are the men who place their products on the markets in the best shape at the least cost. Thousands are looking towards the poultry business for a living. Competition will soon be felt here as keenly as in other lines. The men who are to succeed in the poultry business are the men who can place their products on the market in the best shape at the least cost. Where everything is bought it costs 75 cents a year to feed a hen. It costs this whether she lays 100 or 200 eggs in the time. If the poultryman is to secure a good return on his investment it is evident that it is for his interest to keep the 200 egg hen. It is as easy to get 200 eggs apiece from a flock of hens in a year as it is 100, if one only knows how, and it is the object of this book to tell how. If the reader will carefully follow my instructions I am prepared to assure him that he will greatly increase his egg yield and eventually reach the 200 egg mark.

AN ESSENTIAL THING IN STARTING.

I do not mean to say that the reader can take a flock of old hens of any breed or no breed and get 200 eggs a year apiece from them. There is no man living who can do that. The hens must be young and must come from an egg-producing strain. There is an old saying that blood tells. This is as true of poultry as of anything else. There are some breeds noted for egg production, and in all breeds there are strains that lay better than others. If the reader is not prepared to start in with a good-laying strain he must not expect to get 200 eggs apiece from his birds. By carefully following the instructions of this book he can largely increase his egg yield, but he must not expect to get 200 eggs apiece. I cannot impress it too strongly upon the reader's mind that if he expects to get 200 eggs apiece from his hens he must start in with a great-laying strain.

WHAT BREED IS BEST?

There is an old Latin proverb, *De gustibus non est disputandum,* which I will take the liberty to translate for the benefit of those who have been out of school for some time. Its meaning is this: In matters of taste there is no argument. This is as true in the poultry business as it is elsewhere. Other things being equal that breed is the best for a man which he likes best. There is no breed that combines all the excellences and has none of the defects. There is no breed that does not have its admirers. In general it may be said that the most profitable breeds are to be found in the Asiatic, American and Mediterranean classes, as follows: In the Asiatic class the Light Brahmas, Buff and Partridge Cochins; in the American class the Barred, Buff and White Plymouth Rocks, all the Wyandottes and the Rhode Island Reds; in the Mediterranean class the Black Minorcas, Brown, White and Buff Leghorns. These are the great money-making varieties. The Asiatics are excellent table fowls and prolific layers of dark-brown eggs. They are good sitters and mothers, although somewhat clumsy. They are inclined to be sluggish and readily take on fat. They stand cold well, and make good winter layers. The Mediterraneans are egg machines, turning out great quantities of white-shelled eggs. They do not stand cold as well as the Asiatic and American breeds, and are not as good fowls for the table. The Americans on the whole are the favorites. They are all-round birds, good layers of brown eggs, excellent for the table, good sitters and mothers. They stand cold well, and are the birds for the farmers and breeders. The danger with every breed is that it will get into the hands of the fanciers and be bred for points rather than for utility. Stamina is the important thing, and not the show card. It will be a great day for the poultry business when farmers keep more pure-bred fowls, for then the great standard varieties may be kept up without danger of deterioration.

HOW MANY VARIETIES SHALL I KEEP?

After studying the matter carefully I have come to the conclusion that it is better for the average poultryman to confine himself to one variety. He will get better results and make more money if he concentrates his energies than he will if he dissipates them.

There is no danger of contamination where only one variety is kept. Unless a man farms out his birds—keeping one kind here and another there—it is almost impossible to prevent mixture. Some ambitious rooster will scale the fence and get into the wrong yard, or some giddy pullet will arrange a tryst with a cockerel that has captured her fancy, of another breed. Where only one variety is kept there are times when the poultryman can give his stock "a run to grass," opening the gates and letting the birds range at will. A few weeks' freedom in the spring and fall greatly invigorates the flock. Where several varieties are kept such a vacation is impossible.

Where a man keeps only one variety he has more birds to choose from, and consequently can steadily improve his flock. Suppose a man intends to keep 300 layers. To keep his stock good it will be necessary for him to get out 600 to 800 chickens each year. If he keeps only one variety, out of this large number he ought to be able to make up some very choice breeding pens; but if he keeps half-a-dozen varieties the circle of choice is very much restricted. Consequently his stock will not show rapid improvement.

How much better it looks to see just one kind on a place! The casual visitor is impressed, and even those who pass by have their attention attracted. Many a time have I heard favorable comments upon my White Wyandottes from persons driving by; and summer people who come here in large numbers are willing to pay me an extra price for eggs and chickens, just because my stock looks so nice.

When I send away for stock or eggs I always send to a specialist. I have the feeling that a man who handles only one kind can do better for me than a man who handles a dozen or more. This feeling is shared by others. I know men who will not buy of a man who advertises more than one breed.

Where a man desires to keep more than one variety I would suggest that he confine himself to one family or breed. In this way he will escape some of the difficulties that beset the path of the man who handles a number of varieties. The fowls being all of one family will have the same characteristics and respond to the same treatment. In case of an accidental mix-up the damage is reduced to a minimum, for the birds are all of the same size, comb and contour.

HOW MANY EGG RECORDS ARE WRECKED.

Some time ago I received a letter from a young woman who is an enthusiastic poultrywoman, in which she said that she was getting a goodly number of eggs, but that her record was lowered because she had kept over half a dozen hens which had laid well the year before. She said that she knew better, but could not resist the temptation. I mention this case because it is so typical. More egg records are wrecked by keeping old hens in the flock than in any other way! There is always a temptation when a hen has laid well to keep her the second year. This temptation must be resisted if one is in quest of a big egg record. The fact that a hen has laid well for one year since coming to maturity incapacitates her from ever laying so well again. She has drained her system, and requires long recuperation before she can lay even moderately. *You may set it down as an axiom that it is the pullets that give the big egg records.* If you have in your flock some hens that you desire to keep a second year as a reward for past services, put them in a pen by themselves and do not look for large egg production from them. It is the pullets that lay, and the early-hatched pullets at that. Get out your chickens in March, April or May, according to the breed, if you want winter layers.

Another way in which many egg records are wrecked is by harboring loafers in the flock. Not every early-hatched pullet is a layer. The loafers must be weeded out in some way or they will reduce your average. Suppose you have two hens in a pen, and one lays 200 eggs a year and the other none. The average for the two is 100 eggs apiece. The loafer has reduced her companion's egg record one-half. Many poultrymen are now using the Eureka nest box or some other similar contrivance and keeping individual records.

TO PICK OUT THE LAYERS.

Sometimes a person cannot afford to go to the expense of a patent nest box, or does not care to keep individual records, but would like to be assured that every pullet in the pen is a layer. There is a very simple and inexpensive way to do this. Partition off one corner of the pen into a little cage, and into this put the pullets one by one. Give the pullet the same food that is being given the rest, and keep a dish of water near her. Let her remain in the pen until you are satisfied that she does or does not

lay. Sometimes three days are sufficient for a test, sometimes a week, and sometimes two weeks are needed. If a pullet is old enough to lay and does not lay in two weeks, or lays only two or three eggs in that time, she should be killed and eaten. Otherwise she will reduce your egg record. I repeat what I have just said, that one cannot afford to harbor loafers. Sometimes the handsomest pullets are the poorest layers. I had a pullet once, perfect in form and plumage, which failed to respond to the test and was killed. I did not find any trace of an egg in her. She was absolutely barren. It costs 75 cents a year to feed a hen, and this money is thrown away if the hen does not lay. Therefore test your pullets. If you do not care to go to the trouble of partitioning off a place in the pen, an old dry goods box with slatted top will answer. But I would strongly recommend that this inside cage or pen form a feature of every compartment in your hen house. Its uses are many. I have already referred to its value as a place to test pullets. If you alternate cocks the one that is resting may be confined in this pen. Broody pullets may be kept there. It is an excellent place in which to set hens, and the chickens may be kept in the pen with their mothers until they are old enough to be put out of doors.

THE THREE CONDITIONS OF EGG PRODUCTION.

After the idle and sluggish birds have been weeded out and the pens made up, we are in a position to strike for a big egg record. In order for us to realize our ambition it will be necessary for us at the outset to understand the conditions of egg production. It was a maxim of Lord Bacon, one of the greatest men that ever lived, that Nature is the great teacher, and that in order to learn we must interrogate Nature. If we study Nature with open eyes she will often give us suggestions of great value and fruitfulness. The poultryman must continually go to Nature, the great teacher, and he will not go in vain. In the state of Nature in which wild fowls live, or in the state of semi-Nature in which the farmer's fowls are kept, what is the season of egg production? Summer. Why? Because in summer the conditions of egg production are present. What are these conditions? Warmth, proper food and exercise. Reproduce these conditions at any season of the year and the fowl must lay. The poultryman should keep this fact in mind and govern himself by it.

THE HEN HOUSE.

It is not my purpose in this booklet to give plans for a hen house. The style of house a man builds will depend upon his means and his inclinations. Variety is one of the fundamental laws of the human mind. There are poultry houses costing thousands of dollars, and there are poultry houses that were built for less than a dollar a running foot. It is not always the most expensive house that gives the most eggs. But whether the house be cheap or dear it should have three characteristics.

1. It must be *dry*. This is imperative. Dampness seems to be fatal to fowls. They will stand considerable cold without injury, but succumb speedily to dampness. Roup, rheumatism and kindred evils go with a damp house. If possible the house should be located where there is good natural drainage. The most important thing about the house is the floor. The best floor is made by carting in rocks to the depth of two feet, filling the interstices with gravel, and carpeting the whole with six inches of dry sand. In regions where rocks abound, as they do in New England, such a floor is not particularly expensive. Next to this ranks a board floor, covered with sand and gravel. Where the house is in a high and dry location an earth floor does very well, provided it is raised above the level of the ground.

2. It should be *warm*. Nature has provided the hen with an ample covering of feathers, and she will not freeze even if the temperature of her house goes far below zero. But under such circumstances she will lay few eggs. How can she? All her food goes toward making caloric, and there is no surplus for anything else. Accordingly if you want eggs in winter you must see to it that your hens are kept warm. When I speak of the necessity of keeping the house warm I do not mean that it must be kept at 68 degrees, the proper temperature for a human dwelling. The temperature of a hen's body is 103 degrees, five more than the temperature of the human body. Then the hen is supplied with a thick coat of feathers. In a properly constructed house there is no need of artificial heat. A house should be so built that in the coldest weather water will not freeze solid in it. If it is as warm as this it is warm enough. If you are going to build a house in which you expect to get winter eggs, you must not build it too cheap. Tarred paper should be used under the shingles or clapboards and the house should be sheathed inside. Double windows should be put on in the coldest weather. To ventilate the house open the doors wide for a few minutes even

on the coldest day. If a lantern will burn in a house with a clear bright flame the ventilation is sufficient.

3. It should be *sunny*. Fowls love the sun. See them stand in the path of sunlight in the morning of a clear bright winter day. The house should be situated where the sun will shine in it the most hours every day in winter. There should not be too many windows; for the windows let the heat pass out as easily as they let it pass in, and the change in temperature between day and night is too great.

THE TOILET OF THE HOUSE.

In enumerating the conditions of egg production I might have mentioned a fourth, *comfort*. Hens will not lay unless they are fairly comfortable. How can a hen lay eggs in a cold, damp house with a swarm of parasites sucking her blood? I said a few sections back that if you want an egg record you must harbor no loafers. The worst loafers you can harbor are swarms of lice that suck the life-blood of your hens and yield nothing in return. And yet it is comparatively easy to keep a flock clear of lice. I seldom find them. Why? Because I do away with the conditions that favor them. I keep my house clean. In order to keep your birds free of lice you must start right. Perhaps you have on your place an old ramshackle house in which hens have been kept for years. It is impossible to keep fowls free of lice in such a house. Why? Because the house is haunted. Lice lurk in every crack and crevice, and it is almost impossible to exterminate them. You may fumigate, you may burn sulphur; but some will escape to hatch out their pestilential brood. The best way is to tear down the old house, burn the boards, and start in again. Build a new house of clean, sweet-smelling lumber, and make up your mind that it shall not be polluted with lice.

Before putting your birds into your new house dust them thoroughly with some good insecticide. Sprinkle some of it in the nest boxes. Take an old can half full of kerosene, and with a paint brush go over the roosts. This should be done in summer at least once a week. Provide the hens with a sand bath, remove the droppings every few days, keep the cobwebs swept down, sprinkle air-slacked lime about freely, and you will have little trouble with lice.

RIDDING A HOUSE OF VERMIN.

Sometimes through carelessness or neglect a house becomes infested with vermin, and then radical measures are necessary. In the first place the house should be thoroughly fumigated. Close every door and window, and see that there are no cracks or apertures to admit air. Burn a pound of sulphur for every 100 square feet of floor space in the house: thus a house 10 x 10 will require one pound of sulphur, one 20 x 10 two pounds, one 30 x 10 three pounds, and so on. The sulphur must be burned in iron vessels, which must be set on gravel or sand, so that there can be no danger from fire. Into each vessel put a handful of carpenter's shavings saturated with kerosene, and upon these sprinkle the sulphur. Place the vessels in position, apply a match to the shavings, and hastily leave the house, closing the door behind you. Do not open the house again for five hours, when every door and window should be thrown wide open. In case you feel any anxiety about fire, you can look in through a window once in a while to see that everything is going well.

After the fumes of sulphur have been driven out, with a hand sprayer go through the house sending a spray of kerosene everywhere. These sprayers can be bought for a dollar each, will last for years, and are simply invaluable. All the time you have been at work the hens have been in the yard outside, without food, and are now anxious to return to their home. Let them in one by one, and as each enters catch her and dust her well with some good insecticide. Tobacco dust, which can be bought at the florist's for five cents a pound, is cheap and effective.

You have now freed your house and birds from vermin for the time being, but have not destroyed the eggs, and in a week another swarm will hatch out. Accordingly it will be necessary to repeat the process once or twice before the pests are exterminated. You can tire them in time; but before you get through you will have learned the truth of the old saying, that an ounce of prevention is worth a pound of cure.

TO DUST A HEN.

With your left hand grasp the hen by the legs, and lay her breast-down upon a newspaper. The powder should be in a tin box with a handle and a perforated cover. Sprinkle the powder into the feathers around the vent, rubbing it in well. Work the powder into the feathers about the neck. Work the powder

into the feathers on the sides and under the wings. Let the hen stand a moment, keeping your hands lightly around her so that she cannot get away. Return her to the roost and take another. After going through the pen shake the powder that has fallen on the newspaper back into the can or package. One application kills the lice that are on the hen at the time, but in a week there will be another brood. The best poultrymen recommend dusting a hen at least three times, at intervals a week apart, and never admitting a strange hen into the pen without first dusting her thoroughly. One lousy hen will contaminate all the rest, and so it is necessary to be on one's guard all the time.

FEEDING FOR EGGS: WHAT TO FEED.

We now have our hens in a dry, warm, sunny and comfortable house, have supplied them with facilities for keeping clean, and of course want them to lay. What shall we feed and how much shall we feed them? This is the most momentous question that confronts the poultryman. Unless a hen is supplied with materials for egg production she cannot lay. She can no more produce eggs without the proper food than a factory can turn out the finished product without raw materials. What shall we feed and how much shall we feed therefore?

Let us again follow Lord Bacon's advice and interrogate Nature. Suppose we take a hen as she comes up to the house at the close of a long day in summer from foraging in the fields, kill her, take out her crop and analyze its contents. If we do so it is obvious that we shall obtain a least a part of the information we are after, for a hen lays in summer or not at all.

What do we find as the result of our analysis? The crop we are dissecting has about as many articles in it as the average small boy's pocket, and they are equally miscellaneous. We find grains of corn that the hen has picked up about the barn, pieces of bread and table waste that she has found under the sink spout, clover leaves and tips of grass blades, bugs, worms and a mass of matter that we cannot resolve into the original elements. The first thing that impresses us as the result of our analysis is that the hen seeks VARIETY. The second is, that this variety admits of classification. This mass of miscellaneous matter that we found in the hen's crop can be arranged in three divisions: 1. Grain. 2. Green food and vegetables. 3. Animal food—in the form of bugs, worms and so forth. The conclusion is irre-

sistible, that these three elements must be combined if we would have a perfect ration.

How shall we combine them? The answer is not so difficult as one would at first suppose. There are many ways. The hen makes a new combination every day. Perhaps the ideal way is to have no stereotyped method, but to study variety. If we combine grain, green food and meat in the daily ration, the hen can hardly fail to respond with a goodly output of eggs.

There is no article of food that is so much abused as corn. Corn has its place, and an important place, in the bill-of-fare of fowls. But a hen cannot be properly nourished on corn alone. She needs a balanced ration. The men who get results in egg production are the men who pay great attention to feeding, and seek variety.

FEEDING FOR EGGS: HOW MUCH.

The problem, as every poultryman knows, is not what to feed, but how much. If you do not believe this write to the editor of your favorite poultry paper and ask him how much food you shall give a flock of 15 hens, and see what he will say. It takes a great deal of skill to steer between overfeeding on the one hand and underfeeding on the other. I believe however that there is a scientific principle underlying the matter, and think that after a great deal of study and experimentation I have discovered the principle.

In order to determine how much we should feed we must again interrogate Nature. Before we began to dissect the crop of the hen we had killed, suppose we had put it in the scales to ascertain its weight. If the hen from which the crop was taken was of an American breed, if she had been running in the fields all day and just before she had been killed had been given all the corn that she would eat, her crop with its contents would weigh not far from six ounces. Allowing that two ounces of food have passed from the crop into the gizzard during the day, and from the gizzard into the intestines, it will be seen that when a hen is on the range, supplied with abundance of food, she will consume about eight ounces of food in the course of 24 hours. It would seem therefore that this is about the amount a hen needs to supply all the demands of her system and leave a margin for egg production. But before we settle down to this conclusion there are some things to be taken into consideration. On the range the

hen has had plenty of exercise, and needs more food to supply the tissue lost than when in confinement. On the range food is more bulky and less nutritious than the food the hen receives in her pen. It contains a larger proportion of grass and vegetables. It is probable that in the pen, where the hen does not exercise so freely as she does on the range and where her food is more concentrated, she does not need so much food by one-fourth as she does when at liberty. Six ounces of food a day ought therefore to be ample to supply all the needs of a hen in confinement.

Suppose we try a little experiment to verify this conclusion. Let us take a laying hen a year old and shut her up in a pen by herself, feeding her but once a day, but giving her all she will eat at this meal. The food we set before her is a mash containing all the elements for nutrition and egg production. We shall find that the hen will continue to thrive and lay eggs on six ounces of food a day. There will be a falling off in egg production, owing to the close confinement and change in methods of feeding, but the hen will live and lay on six ounces of food a day. We are now confirmed in our conviction, that in the American breeds six ounces of food a day is about the normal amount for a hen in confinement. Whether she needs a little more or a little less must be determined by individual experimentation.

Six ounces of food a day for a hen weighing six pounds seems at first thought an enormous quantity. In the same ratio a man weighing 160 would consume 10 pounds of food every 24 hours. But before we dismiss the matter as absurd let us consider a moment. The hen's food is not so concentrated as the man's. It contains far less nutriment in proportion to bulk. A considerable proportion of it will be voided in the form of excrement. Then the hen has a task to perform such as is imposed upon few other creatures. She is expected to lay an egg weighing not less than two ounces; and an egg, as everyone knows, is one of the richest of food products. Deduct from the six ounces of food two ounces for waste and two ounces for egg production, and it will be seen that only two ounces are left to repair the tissues and maintain the temperature of the body. The laying hen needs a generous diet, and those doctrinaires who advocate keeping her in a state of semi-starvation have no support in reason for their theory.

FEEDING FOR EGGS: THE AUTHOR'S METHOD.

Having given my readers the principles that apply to feeding, I propose now to tell them how I put these principles into practice. I desire to state here that I have no patent methods. I aim to apply common sense to the problem of egg production, as I do to other things; but I do not claim to have a monopoly of wisdom. There are doubtless other methods as good as mine. As I said in a preceding section, there are many possible combinations that will produce good results. I give you mine, and leave you to adopt it or not as you think best.

I aim to hatch out my chickens early in the spring, so that they will get to laying before cold weather; and by the first of October begin to make up my laying pens for the winter. In each pen there are 18 or 20 pullets; but the number will ultimately be reduced to 15, as the pullets are tested and the inferior ones thrown out. The pen when complete will contain one male and 15 females.

From October to April I feed as follows: A mash the first thing in the morning. This mash is made as I am about to describe. At the mill I buy corn and oats ground and mixed together. The basis of the mash is this mixture combined with bran, in the proportion of two scoopfuls of corn and oats to one of bran. About two-thirds of the mash is made up in this way. I next put in one-half ounce of green ground bone for each fowl. I am aware that this is a much larger proportion of green ground bone than is generally recommended, but it is no larger proportion of animal food than Nature furnishes when the fowls have free range. So great is my faith in green ground bone, that I have ventured to give expression to it as follows:

To make hens lay
Two eggs a day,
Feed green ground bone
In the mash at morn.

It is perhaps needless to state that into the mash go the scraps from the table, which otherwise would be burned. I aim to introduce some green food every morning, and to give as large a variety as possible, believing that this is Nature's way. One day I feed clover, the next cabbage, the third onions, the fourth apples, the fifth potatoes, and so on. These vegetables are chopped fine or run through a root cutter, and fed raw. I feed clover once a week, or oftener when I can get no other green

food; but confess that I am not so much in love with it as most writers on poultry topics seem to be. The fowls do not eat it with great avidity. That tells the story. The food that is eaten with the best relish is the food that gives the best results. The year that I made such a phenomenal record with my hens—214 eggs apiece from October to October—I fed no clover whatever; but vegetables instead. Before the clover is fed in the mash it should be steeped for some time in hot water.

The mash is salted about as I would salt it if it were intended for human consumption, and in the coldest weather I sprinkle in cayenne pepper. The mash is mixed with boiling water, and is allowed to remain on the stove until the whole mass is steaming. I do not take it off until the fire underneath has warmed the kettle so that it begins to feel uncomfortable to the hand. I aim to have the boiling water thoroughly incorporated, so that there will be no dry streaks, and to have the mash in what might be called a granulated state—that is, crumbly but not sloppy. As I feed it, the mash is neither raw nor cooked; but half way between.

My feed troughs are pine boards four feet long and one foot wide, rimmed with laths to keep the mash from being scattered over the floor. I feed the mash warm, not scalding hot; and feed what the hens will eat in 10 minutes. If anything is left on the boards at the end of 10 minutes it is scraped back into the kettle, and the boards stood up against the wall where they will be out of the way.

One day in seven I give my hens a thanksgiving breakfast; that is, I give them all they will eat, not removing the surplus until the last hen has turned away. The philosophy of this thanksgiving breakfast lies in the fact that under my system of feeding, where I aim to keep the birds just a little hungry, there is danger that I will underfeed; and this thanksgiving breakfast is designed to meet this danger. There are always one or two hens in a flock less aggressive than the rest, and these do not get their share and are underfed. But one morning in seven all can regale themselves to the utmost, and the timid hens and the hungry hens can be filled.

At 11 o'clock in the forenoon I feed a grain ration—wheat, oats, or barley—consisting of one-half ounce to each head. In each house I keep an iron rake, and with this I rake the grain into the sand which forms a carpet to the floor. It takes but a moment, and in digging it out the hens get the best of exercise;

for for every kernel a hen finds she buries two. Mornings when I feed the thanksgiving breakfast I omit this lunch at 11 o'clock.

The latter part of the afternoon I feed one ounce per head (strong) of cracked corn. Sometimes I vary by feeding an equal amount by weight of scalded oats. (The oats are weighed before scalding.) In the shortest days of winter I feed but twice,—the mash at sunrise and two ounces of corn to each hen (strong) in the middle of the afternoon. I do not believe in feeding whole corn to laying stock, as it is too easily found and quickly eaten.

I do not wish to give the reader the impression that I weigh the grain every day, as this might seem too laborious a method. After a little while the eye becomes accustomed to quantities and can judge with sufficient exactness. I do not weigh the grain or measure the mash but once a month; and when I do, find I have judged quantities with surprising accuracy.

From April to October I feed differently. The weather is such that the hens are able to be out in their yards, where they can pick up at least a part of their living. I have my garden and lawn to look after, as well as my professional duties to attend to; and try to arrange so that the care of my hens will be as little burden as possible. I feed no green food, as they can get plenty of that in their runs, and less green ground bone than in winter. I feed the mash at night, and give them all they will eat. I reduce the grain ration, throwing in a few handfuls of corn or oats morning and noon. If I were a farmer, and my hens had free range, I would feed nothing but cracked corn in the summer, and not much of that,—perhaps half an ounce per head to my hens as they came up to the barn at night.

Summer and winter I keep plenty of pure water before my hens, and this water is given them in clean vessels filled at least twice a day. In the winter I give warm water instead of cold. A laying hen is a thirsty creature and should be well supplied with drink.

FEEDING FOR EGGS: ANOTHER EXCELLENT METHOD.

There is a lady in Auburn, Maine, formerly a school teacher, who for some years has been devoting her spare time to poultry, with great success. No one in the city where she lives seems able to get the same number of eggs from a given number of fowls that she can. This lady, Miss Maria Stevens, has very kindly given me her method of feeding, and it gives me great pleasure to present it here. It will be seen that Miss Stevens makes a

liberal use of green ground bone and meat meal, as all must do who are in quest of a big egg record.

"In the morning," she writes, "I feed a mash made of about two parts bran to one part ground oats. For every 50 hens I put in two quarts, good measure, of green ground bone; also some vegetable well cooked and mashed. This latter I vary as much as possible, using water in which vegetables have been cooked to moisten the mash, providing it is not so strongly flavored as to be disagreeable to the hens, as sometimes happens if turnips have been cooked in it. The proportion of vegetable matter given to hens in winter is much smaller than that given in summer, and also smaller than the other ingredients in the mash. In summer cut grass or clover and vegetable tops are substituted for the roots given in winter and are fed separately whenever convenient. Dried beef scraps are substituted in summer for the ground bone in winter and are fed in smaller quantities, perhaps half the amount. I season with salt rather less than I would for my family. I never use pepper, but occasionally ginger. When using pepper and seasoning highly with salt, I have always had more or less hens die of dropsy in spring. My mash is always thoroughly scalded and frequently well cooked, as in winter I often mix it the night before and let it remain in the oven over night. Animal meal I consider a cheap food which will make hens lay; but I cannot use it, even in much smaller quantities than the rule.

"My hens always have warm water in clean drinking vessels in winter and cool water in summer.

"The second and last feed comes after dinner, when I hoe or rake into the litter on hen house floor two parts whole oats to one part wheat. The litter is six or eight inches deep, and the feed is given generously enough to make them feel rewarded for scratching up to the next afternoon.

"Oyster shells I prefer to throw in fresh every day, especially in the latter part of the winter, when they get too busy laying to eat the proper amount of lime.

"A neighbor adopted my way of feeding, but with pullets bought of me failed to get like results. I attribute the failure to the fact that he was afraid of wasting feed, and if he could possibly find a grain would not feed more. In the morning I feed all the hens will eat with a relish."

THE GOLDEN RULE FOR FEEDING.

I can do no better than to close this section by giving what I believe to be the golden rule for feeding. *Select a representative hen and put her in a pen by herself, keeping her there at least a week, feeding her but once a day, either morning or night as may be most convenient. Weigh out to her all the mash she will eat, and keep careful record of the results. The average amount she consumes per day by weight will be the minimum you should feed each member of the flock for best results in egg production.*

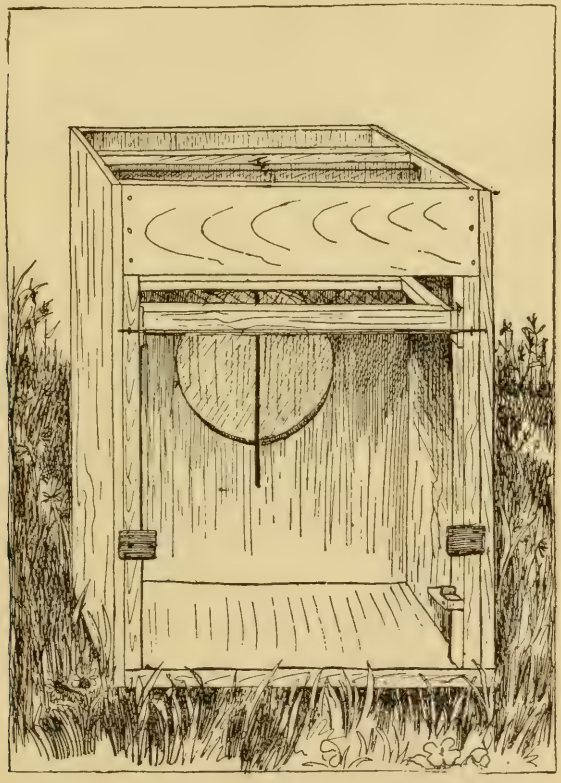
A NEST BOX FOR INDIVIDUAL RECORDS.

Within the past few years the poultry business has been almost revolutionized by the introduction of a nest box for individual records. It is a fact well known to all breeders of animals, that desirable traits may be transmitted, and by careful matings a strain may be permanently established. I suppose that all the horses in the world come from a common ancestor. And yet how great the differentiation to-day! Natural selection, supplemented by human selection, has produced the trotter, the pacer, the hackney, the saddle horse, the huge Percheron and the diminutive Shetland pony. Among cows some breeds are noted for the production of butter, others for milk, and others for beef. Among hens there are some breeds that excel as egg producers, and in all breeds there are strains that lay better than others. It is obvious that if we are to build up a great egg-producing strain we must breed from great layers.

How may these great layers be picked out? There are two ways. One is by the testing pen; the other, by the trap nest box. The former makes the pen the unit; the latter, the individual bird. The former is the way I myself proceed. My laying pens are made up of birds that have been carefully tested in solitary confinement, as described in a preceding section. If every bird in the pen is a layer, and the average of the pen in egg production is satisfactory, I do not hesitate to breed from that pen. This is a great labor-saving method. The birds do not require the constant attention that is demanded where individual records are kept. Each bird is tested at the beginning of the season, and marked with a leg-band if she meets the test. Otherwise she is put in the pen for culls or dispatched.

Some poultrymen desire to make the individual bird the unit, and not the pen; and for their purpose a nest box is necessary.

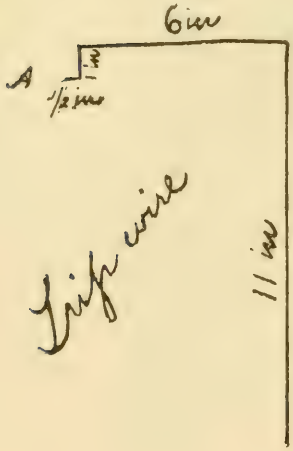
There are many of these boxes on the market. The right to use these boxes, with plans for their construction, costs from one to three dollars. Through the courtesy of Mr. G. M. Gowell, agriculturist of the Maine Experiment Station, I am able to present my readers with the plan for a nest box free of charge. The nest box here described was made by Mr. Gowell after a careful study of the various nest boxes on the market, and is intended to combine their excellences and avoid their defects. This is the box that is illustrated here, and the description of it is in Mr. Gowell's own words.:



SINGLE NEST BOX.

"The nest box is very simple, inexpensive, easy to attend, and certain in its action. It is a box-like structure, without end or cover; and is twenty-eight inches long, thirteen inches wide and thirteen inches deep—inside measurements. A division board with a circular opening seven and one-half inches in diameter is placed across the box twelve inches from the back end and fifteen inches from the front end. The back section is the nest proper. Instead of a close door at the entrance, a light frame of inch by inch and a half stuff is covered with wire netting of one inch mesh. The door is ten and one-half inches wide and ten inches high and does not fill the entire entrance, a space of two and a half inches being left at the bottom and one and a half inches at the top, with a good margin at each side to avoid friction. If it filled the entire space it would be clumsy in its action. It is hinged at the top and opens up into the box. The hinges are placed on the front of the door rather than at the center or back, the better to secure complete closing action.

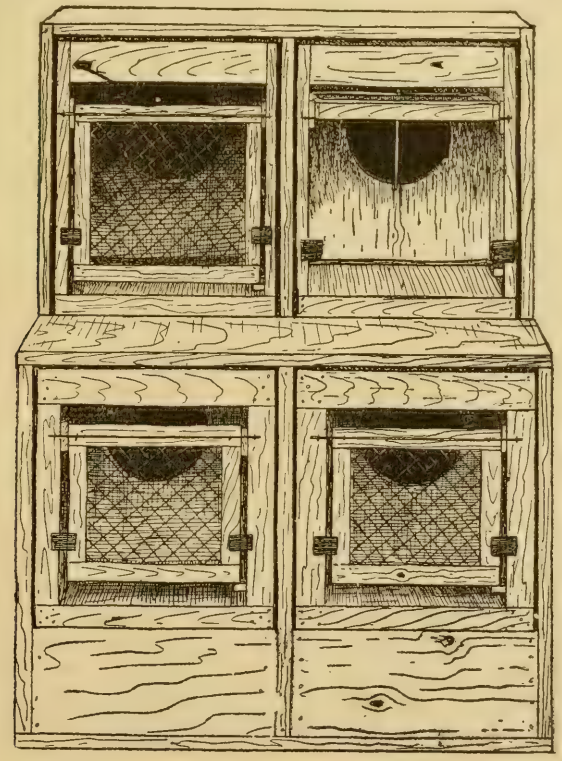
"The trip consists of one piece of stiff wire about three-sixteenths of an inch in diameter and eighteen and one-half inches long, bent as shown in drawing. A piece of board six inches wide and just long enough to reach across the box inside is nailed flatwise in front of the partition and one inch below the top of the box, a space of one-fourth of an inch being left between the edge of the board and the partition. The purpose of this board is only to support the trip wire in place. The six-inch section of the trip wire is placed across the board and the long part of the wire slipped through the quarter inch slot, and passed down close to and in front of the center of the seven and a half inch circular opening. Small wire staples are driven nearly down over the six-inch section of the trip wire into the board so as to hold it in place and yet let it roll sidewise easily.



"When the door is set, the half inch section of the wire marked A comes under a hard wood peg or a tack with a large round head, which is driven into the lower edge of the door

frame. The hen passes in through the circular opening and in doing so presses the wire to one side, and the trip slips from its connection with the door. The door promptly swings down and fastens itself in place by its lower edge striking the light end of a wooden latch or lever, pressing it down and slipping over it; the lever immediately coming back into place and locking the door. The latch is five inches long, one inch wide and a half inch thick, and is fastened loosely one inch from its center to the side of the box, so that the outer end is just inside the door when it is closed. The latch acts quickly enough to catch the door before it rebounds. It was feared that the noise arising from the closing of the door might startle the hens, so instead of wooden stops pieces of old rubber belting were nailed at the outside entrances for the door to strike against.

"The double box with nest in the rear end is necessary, as when a bird has laid and desires to leave the nest, she steps to the front and remains there until released. With one section only, she would be very likely to crush her egg by standing upon it."



NEST BOXES IN POSITION.

KEEP THE HENS AT WORK.

The hen at liberty is a great forager, on the move from morning until night. She needs a chance to exercise when in confinement, or she will take on fat and become useless as an egg producer. Connected with each house there should be a yard of generous size. The yard should be at least 10 times the size of the house: thus a house 10 x 10 will take a yard 10 x 100; one 20 x 10 a yard 20 x 100; and one 30 x 10 a yard 30 x 100. These yards are the best places in the world for fruit trees. It is surprising how fast trees will grow and how heavily they will bear when enriched by the droppings of fowls. There are two orchards in this town, standing side by side on the same soil, the trees of which were bought of the same agent on the same day. One of these orchards is used as a hen yard; the other is not. The trees in the orchard that is used as a hen yard have made double the growth and bear four times the fruit of the trees in the other. These two orchards are a good object lesson right here at home of the value of planting fruit trees in poultry runs. The trees furnish shade for the hens in the hot days of summer, which is an important consideration.

In winter when the hens are in their house they should be made to work. The floor should be covered to the depth of six inches or a foot with litter, and grain should be thrown into it and the hens made to dig it out. The litter should be shaken up with a fork once a week, and renewed once a month. If the floor of your house is carpeted with dry sand you do not need to provide a litter except in the very coldest weather. Rake the grain into the sand with an iron-toothed rake, and make the hens scratch for it.

GRIT AND OYSTER SHELLS.

Nature has not provided fowls with teeth, and consequently they cannot masticate their food as can the higher animals. The food passes from the crop into the gizzard, where it is prepared for the stomach by trituration; that is, as the food passes through the gizzard it is triturated, or ground up, by the little flinty particles which line that member. Unless the fowl is well supplied with grit the food passes into the stomach improperly prepared, and the result is indigestion. It is a great mistake not to keep the fowls well supplied with grit. Oyster shells are necessary to supply the lime needed for the egg shells, and should be supplied in abundance.

DON'T CROWD YOUR BIRDS.

There is a snare spread for beginners in the poultry business which catches nearly all: it is to crowd the birds. The prospective poultryman has kept a small flock and they have laid well. He begins to reason like this: "I have kept 12 hens in this pen the past year and they have netted me two dollars apiece. All I have to do to increase my income is to increase the number of my birds. If 12 hens have paid me $24, 50 hens will pay me $100." This seems logical, and the prospective poultryman goes to work and puts in 50 birds, only to find at the end of the year that the 50 birds have not paid him so well as the 12 did. They have laid no more eggs, and sickness has been rife among them. More men lose money and retire from the poultry business in disgust from losses brought about by putting too many birds into one pen than from any other cause.

The farmer would not think of putting two cows in one stall. He would not plant his potatoes in rows one foot apart. He would not shut up his family in one room. Why should he not display the same good sense in dealing with his fowls? Experience has shown that 10 square feet of floor space is about the amount needed by each hen if she is to do her best. Where the house is kept perfectly clean, and where the hens have a chance to get out doors every pleasant day, they can get along with a somewhat smaller space. But for the best results in egg production there must be plenty of room. The year I made the phenomenal record with my White Wyandottes—214 eggs apiece from October to October—I knocked out the partitions between two pens and gave the flock double room.

BEST SIZE FOR A FLOCK.

The size of a flock will depend something upon circumstances. Experience has shown that a large number of birds kept together do not do so well as a smaller number. Twenty-four females and one male are as many as should ever be put in one pen, and even then there should be 10 square feet of floor space to each bird. The ideal number to a pen, I think, is one male and fifteen females. Where this number is kept it makes it easy to feed the grain in the proportion I have elsewhere recommended,—one ounce to each bird making just one pound to the flock. It takes moral courage to cut down the size of the pens, but the man who does it will have his reward.

SICKNESS IN THE FLOCK.

Where fowls are treated as I have recommended there will be comparatively little sickness. It seldom pays to doctor sick fowls. They should be killed, and burned or buried. In case you desire to doctor a sick fowl quarantine her so that she cannot communicate her disease to the rest. "The Farm Poultry Doctor," by N. W. Sanborn, M.D., is the best brief treatise on diseases of fowls that I know anything about.

INTRODUCE NEW BLOOD.

In order to keep up the quality of the flock new blood must be introduced from time to time. I am aware that much less is said in these days against inbreeding than was the case a few years ago, and that inbreeding is systematically practiced by many poultrymen with apparently no harmful results. But I do not believe in it. It is against Nature, and must eventually result in deterioration. Why is it that many breeds once famous have lost their popularity? It is because the stamina has been bred out of them. Hawthorne, who was a keen observer, as well as one of the greatest masters of English prose that ever lived, in "The House of Seven Gables" has a paragraph showing the deterioration that came to a famous breed of fowls from too close inbreeding. "Nor must we forget to mention a hen-coop of very reverend antiquity," he says, "that stood in the further corner of the garden, not a great way from the fountain. It now contained only Chanticleer, his two wives, and a solitary chicken. All of them were pure specimens of a breed which had been transmitted down as an heirloom in the Pyncheon family, and were said, while in their prime, to have attained almost the size of turkeys, and, on the score of delicate flesh, to be fit for a prince's table. . . . . Be that as it might, the hens were scarcely larger than pigeons, and had a queer, rusty, withered aspect, and a gouty kind of movement, and a sleepy and melancholy tone throughout all the variations of their clucking and cackling. It was evident that the race had degenerated, like many a noble race besides, in consequence of too strict a watchfulness to keep it pure."

BUYING STOCK AND EGGS.

New blood can most conveniently be introduced through the male, and males may be procured in two ways: through purchase outright, through eggs bought of reputable dealers. The former method is the more satisfactory, the latter the less expensive. In purchasing a full-grown bird the buyer takes no risks. He may ascertain in advance just what he is to buy. Any dealer will send description of his birds, and some will send photograph or blue print. If the bird is not as represented he may be returned. The element of uncertainty is practically eliminated. In buying eggs it is different. The most careful and conscientious breeder cannot guarantee that any given per cent. of the eggs he sends out will produce chickens. There is no way of determining, even by the Roentgen ray, whether there is a germ of life in an egg or not until it has been incubated a few days. After the eggs leave the breeder's hands they may be chilled, if in winter, and roughly handled at any season of the year. The customer may have bad luck. He may not know how to run an incubator; the hen may leave her nest or may break some of the eggs under her feet. The business of selling eggs for hatching, which on the surface seems so profitable, is really very unsatisfactory, and many breeders have abandoned it altogether.

If three eggs out of a sitting incubate, and the buyer gets three strong, sturdy chicks, he has no cause for complaint; but, on the contrary, has made a good bargain. Suppose he pays two dollars for the sitting, and in the fall has a trio,—a male and two females. The man who sold him the eggs would charge him ten dollars for birds equally good. One must not expect eggs shipped in the dead of winter, subjected to all the exigencies of travel, to hatch equally well with eggs procured about home in June.

INCUBATOR OR HEN, WHICH?

Sooner or later the poultryman must face the question with which this paragraph is headed, and it is my purpose now to help him to an answer. In this matter, as in most others, there is something to be said on both sides. In favor of the natural method there is first of all economy. It costs at least $25 to secure the outfit for artificial incubation, and this is an expense that many can ill afford. Chickens brooded by hens have more stamina and are subject to fewer diseases than chickens brooded

in any other way. There is no mother for a brood of young chickens that can equal an old hen. Some of the most progressive poultrymen in the country use hens exclusively, setting hundreds of them at a time.

The disadvantages of the natural method is that it is never completely under one's control. Whatever mental qualities a hen may or may not possess she has a full-grown, large-sized will; and no method has yet been discovered to make a hen sit when she does not want to. To realize the largest profits in poultry, chickens must be hatched early and kept growing from the day they leave the shell. It is not always possible to have a supply of sitting hens on hand. The sitting hen is liable to leave her nest before her task is done, and no amount of persuasion will induce her to return. Sometimes she crushes eggs or young chicks under her clumsy feet. At the best she can bring out but a few chickens at a time. After a while the up-to-date poultryman is almost certain to come to the conclusion that he must have an incubator.

The advantage of the artificial method is that it is so completely under one's control. The incubator may be started at any time. The best machines are so adjusted that the element of chance is practically eliminated, and every fertile egg may be incubated. The trouble comes in rearing the chickens. Brooder chickens require much more attention and are more subject to diseases than chickens brooded under hens. The per cent of loss is greater. Especially among beginners there is sometimes a "slaughter of the innocents" that is frightful.

To sum up: If one wants early chickens and wants them in quantities and has the time to give to them, he should by all means get an incubator. Otherwise he would best stick to the hen.

GET A GOOD INCUBATOR OR NONE.

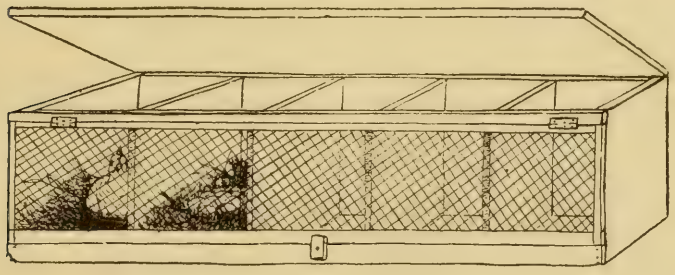
In purchasing an incubator remember that the best is the cheapest. A poor machine is dear at any price. Beware of the home-made incubator. Sometimes they work satisfactorily, but oftener they do not. I know a young man of more than ordinary ingenuity who constructed an incubator from plans that he found in a paper. By visiting the machine at intervals during the day and by getting up two or three times a night to trim the lamp or to pull out plugs so that the surplus heat might escape, he was

able to keep the temperature somewhere near where it ought to be. But one warm Sunday, while he was at church, the temperature took a leap upward, and when he returned at noon the thermometer registered 120 degrees. As a consequence 180 chickens were prematurely roasted, and nearly three weeks of valuable time lost. The young man has lost confidence in incubators and now hatches his chickens with hens. An incubator should be bought at least a month before it is to be started on eggs, in order that the operator may become thoroughly familiar with the machine and know how to run it right.

A NATURAL HEN INCUBATOR.

Under the hap-hazard method of keeping fowls, which too often prevails, hens are set in any place and in any way that may seem the most convenient. Sometimes they are set in the cellar, sometimes in the barn chamber, and sometimes in the hen house, in the midst of the laying stock. Old boxes, baskets and even pails are used as nests. It is no wonder that under such conditions hens break eggs and leave their nests, and that the owner's patience becomes completely exhausted long before the hatching season is over.

The work of caring for sitting hens may be reduced to a minimum by the construction of what I may call a natural hen incubator, the design for which is shown here.



A NATURAL HEN INCUBATOR.

This natural hen incubator may be of any length; but should be two feet deep, two feet high, and divided into compartments 18 inches wide. Some prefer a door to each compartment, but I find it more convenient to have the doors somewhat longer, so that one may enclose a number of divisions. The top should be hinged at the back, so that it can be lifted up if desired, as shown in the cut; but ordinarily it is shut down. The door in front is covered with chicken wire. Each compartment should be in two divisions, so if a hen wishes to leave her nest temporarily she can do so.

If possible, enough hens should be set at one time to utilize all the compartments behind a door. The door should be kept latched except in the morning when it is opened, the hens taken off, fed and watered and left to dust. In from 10 to 20 minutes, according to the weather, the hens should be driven back. As the hens are all set at the same time it makes no difference which compartment a hen enters. She will find eggs ready for her.

Under this arrangement the hens cannot interfere with each other. Eggs are not broken by hens jumping down upon them, as the hens all walk into the compartments from a level. One hundred sitting hens can be looked after with comparatively little trouble.

Where a number of hens is set at the same time one or two should be kept in reserve, in case some of the hens "break up."

The comfort of a sitting hen should be scrupulously looked after. Before she is placed on the nest she should be thoroughly dusted with some good insect powder and again just before she brings off her brood. She should be taken off the nest, fed and watered and given a chance to dust herself every day. Sitting hens should be fed on whole corn, as that is slowly digested and is a heat-forming food.

TO SET A HEN.

Where incubation is carried on by the natural method it is important to have a supply of sitting hens on hand in March, April and May, in order that the chickens may be hatched early. While it is true that no method has yet been discovered to make a hen sit at will, it is also true that the instinct may be encouraged. As soon as we understand the philosophy of incubation we may go to work to bring about the desired result. In a state of Nature when does the hen sit? In summer. Why in sum-

mer? Because the reproductive instinct has been stimulated by the hot weather. Because she has laid her litter out. Because she has become fat and sluggish. It is evident therefore that if we can reproduce these conditions we can hasten the time of incubation.

Old hens make the best sitters, because they are not so active as young ones. The treatment of hens that are kept for sitters should be radically different from the treatment of hens that are kept for layers. They should be confined more closely and fed differently. Corn should form an important part of their food. As soon as a hen shows symptoms of broodiness she should be encouraged. She should be taken at night and placed in a nest prepared for her in a dark, quiet place. This nest should contain china eggs, and should be covered with a burlap bag to make it dark. After 36 hours the bag may be removed and the hen let out for food and water. If she goes back it is safe to entrust her with real eggs.

TO BREAK UP A SITTING HEN.

To break up a sitting hen take a soft cord four feet six inches long, attach one end to the hen's leg and the other to a staple driven into the sill of the house. Leave the hen in the pen with the rest, but where she cannot get on a nest, feed lightly, and keep water within reach. Usually a few days of this treatment is effectual; but if the hen requires more heroic measures put her in the pen with a vigorous male, who will soon break her up.

THE BEST MATING FOR VIGOR.

In another section of this book I have insisted strongly that we must look to pullets for large egg production. The production of eggs however is not all there is to the poultryman's trade. He must raise young stock in order to supply the market with poultry and to replenish his supply of layers. It is a well-known fact that eggs from year-old hens are larger and produce more vigorous chicks than eggs from pullets. The best mating for vigor is undoubtedly a cockerel to year-old hens, and next to this a cock to mature, well-grown pullets. I would advise the poultryman to keep over enough year-old hens to make up his breeding pens. Those that are kept over, being the pick from a large number, will be his choicest birds, and by breeding from them his stock will steadily improve. *Pullets for layers; but year-old hens for breeders and mothers!*

THE LAW OF SEX: MALES OR FEMALES AT WILL.

One of the most interesting problems that confronts the biologist is that of sex. What are the conditions that produce a male organism and what the conditions that produce a female? It is obvious that in a world where everything is by law sex is not by chance, but what the law is has never until now been discovered. Upwards of 500 hypotheses have been advanced; but each hypothesis, when tested by all the facts, has proved inadequate. In a matter where there is so much uncertainty and where so many eminent names are connected with theories that have long since been abandoned, it becomes one to speak with modesty. But it has happened more than once that a great discovery has been made by some obscure man or woman who seemingly has stumbled almost by accident upon something the rest of the world has overlooked. I realize what a stupendous claim I make, but I believe I have thought out the great law that underlies sex, and am able to give that law for the first time to the world. I believe the law will be more carefully studied than I have been able to study it, and better formulated; but I believe the law as I enunciate it will be accepted in all its essential particulars.

Before I enunciate the law I desire to call attention to a fact with which all are more or less familiar: that is, the presence of two sex principles in Nature. These principles are the masculine and the feminine. Not only are these principles present in animal life, but they are also present in plant life,—the two great divisions of sex occurring here. Among flowering plants there are staminates and pistillates, or flowers with male or female organs; and among flowerless plants there are the two corresponding sex divisions. The importance of this fact to agriculture has never been sufficiently grasped. As I write the trees are laden with a wealth of pink and white blossoms, and everybody is predicting an enormous apple crop. But such will not be the case,—at least in this section. Why? Because there are so few bees to fertilize the flowers. Last summer was so dry that little honey was stored, and consequently many colonies died in the winter. As I go about among my trees my ears are not saluted by the hum of little wings and my eyes gladdened by the sight of busy little bodies. There will be a good crop of the self-fertilizing varieties, such as the Baldwin and Greening; but the varieties that require cross fertilization will almost be a failure.

There is another fact in this matter of sex, which is generally overlooked, but the significance of which is enormous. Not only are there two sex principles in Nature, but these two sex principles are present in the same individual! One of these principles is stronger than the other, and gives the name to the sex, but both are there. In every man there is a certain feminine element, and in every woman a certain masculine element. It may be that in a higher type that is to be produced at some future time both of these elements will be blended in exact proportion, and the two principles will no longer be localized but combined. Such a consummation seems hinted at in Luke 20:35, 36,—"But they which shall be accounted worthy to obtain that world, and the resurrection from the dead, neither marry, nor are given in marriage; neither can they die any more: for they are equal unto the angels; and are children of God." The mistake that has been made in the past has been in identifying sex with certain outward organs; whereas these organs are not the source but the manifestation of sex. In the last analysis sex is not physiological but moral.

What are the elements that we denominate as masculine, and what are the elements that we denominate as feminine? The masculine elements are strength, courage, enterprise, excitability, and (may I add?) ferocity. The feminine elements are docility, timidity, domesticity and maternal love. To put it another way, the masculine is the active principle, the feminine the passive; the masculine is the aggressive principle, the feminine the domestic.

We are in a position now to advance to a statement of the law. If the sex of an individual is the resultant of the preponderance of the masculine or feminine element in the composition, it follows with the inevitability of an axiom that whichever of these elements preponderates at the time of the formation of sex will determine its character. The Mississippi is comparatively clear until the Missouri pours into it, and then the water becomes a tawny tide. The strong current from the alluvial plains of the Central West gives color to the whole mighty river from the point of juncture to the Gulf. So the sex element that is the strongest colors and controls the whole. The law of sex is: *The sex of the offspring is in accordance with the dominant sexual principle at conception and immediately afterwards.*

Will this law stand the test of an appeal to facts? It will. The sex of the offspring is in accordance with the dominant sexual principle at conception and immediately afterwards.

What is the masculine principle, as I have defined it? The active and aggressive as distinguished from the passive and domestic. When should you expect the masculine principle to predominate? In time of war and tumult. If the law of sex is correct, as I have outlined it, it should follow that at such times there should be an excess of males born. Such is always the case. If the law of sex is correct, as I have given it, among what class should you expect to find the greatest number of males? Among the poor. Why? Because the struggle of life is fiercer among the poor than among the rich, and this calls out the aggressive qualities. It is a well known fact that among the poor male children predominate, while among the comfortable and well to do the reverse is the rule. If the law of sex, as I have given it, is correct, in what times should we expect the greatest number of female children to be born? In times of peace and prosperity. Why? Because life is easier at such times, and the masculine qualities are not so much at the fore.

The law being as it is it follows that to secure a preponderance of offspring of either sex we must secure the conditions that favor the production of that sex. I am writing now of the poultry business. The same principles that apply to poultry breeding will apply to the domestic animals and even to man himself. But I must confine myself to the task in hand. We want a preponderance of females. The law being as it is, what are the conditions that will produce the greatest number of females and the smallest number of males?

1. Affinity. I mean by this that the male and females should be adapted to each other. Those who have observed fowls closely have noticed that a cock will have his favorites, and that the females will often welcome one male more than another. Where there is perfect affinity the birds are happy and contented, and the conditions are right for the production of females. Where the birds are not well mated and frequent quarrels ensue, the aggressive qualities are uppermost and the offspring likely to be largely males. It follows that two roosters should never be kept in one flock, if an excess of females is desired, as they will quarrel with each other. Nor can the practice of alternating roosters be recommended, as in this case fertility is secured at the expense of sex.

2. Freedom from disturbance and fear. Fowls are extremely conservative,—creatures of habit to an amusing extent. If a hen laid in a certain nest yesterday she means to lay in the

same nest to-day, even if it is occupied and the one by its side is empty. If a hen roosted in a certain place last night she is determined to roost in the same place to-night, whether you want her to or not. Where hens are kept stirred up by the presence of strangers or shifted frequently from pen to pen, the feminine qualities are disturbed and the masculine qualities are aroused. The quieter you can keep your hens the more pullets you will hatch. You should be careful how you admit visitors to your pens during the breeding season.

3. Abundant nutrition. There is nothing that will make animals so cross and restless as hunger. On the other hand the most savage animals become less ferocious after a hearty meal. Regular and abundant nutrition promotes calm and contentment. The sexual perfection of many insects depends upon the nutriment supplied to the larvæ. It has been found that if caterpillars are starved before entering the chrysalis state the resultant butterflies or moths are males, while others of the same brood highly nourished are females. Don't be afraid to feed laying hens generously. If you let them sit when they want to do so they will consume their surplus fat, and after their needed rest will be in condition to go to laying again.

4. Comfort. As I pointed out in the case of human beings more females than males are born in times of peace and prosperity. The reason is life is less strenuous and the active, aggressive qualities are less called upon. The same principle applies in the case of the lower animals. A dry, warm, clean, sunny house has its effect upon sex. Fowls kept in such a house should produce a preponderance of pullets. In the dead of winter we should expect more males than females to be hatched, but as the season advances the excess should be the other way.

5. Time of impregnation. Among human beings it has been found that the nearer conception comes to the close of the menstrual period the more likely the child is to be a girl. The fresher the ovum when fertilized the greater the chances that the offspring will be a female. Reasoning from analogy it follows that eggs laid at the beginning of a litter are more likely to produce pullets than eggs laid later. It is no great advantage therefore to have the hens in our breeding pens begin to lay early in the fall. In American breeds the shells are darkest at the beginning of a litter, and the darker the shell therefore the greater the probability that the chick hatched will be a pullet.

6. The greater the number of females to a male the more pullets. The hens are more ready for the attentions of the male and welcome his approaches instead of resisting them. Put as many females with a male as he can fertilize, and the majority of chickens hatched will be pullets.

FERTILE EGGS AND HOW TO GET THEM.

All around me my neighbors are complaining of poor hatches. One man tells of putting 200 eggs into an incubator and bringing out only four chicks. Some sittings have been entirely infertile. Two or three chicks to a sitting has been about the average. The fertility is better now, as the season is later, but it is still low. With me the fertility has never been more satisfactory. In some sittings every egg has incubated. My neighbors look upon me with wonder, and think I must be in possession of some strange secret. Not at all. I simply have applied a little thought to the problem and have found it easy of solution.

Reproduction draws upon the vital forces as no other act does. The tree that is laden with fruit this year so that its boughs have to be propped up to sustain the weight of golden apples, will not bear again so luxuriantly for several seasons. Reproduction is possible only when the vitality is highest, and when the individual is neither too young nor too old.

In order to get fertile eggs three things are absolutely necessary: maturity, vitality, comfort. The conditions in the breeding pen must be such as to promote an excess of vitality. Where the male is immature, where the house is so cold that all the food eaten goes to maintain the caloric, where the fowls are alive with vermin or rotten with disease, the fertility will be low. Inbreeding also tends to infertility. So does lack of exercise and overfat condition of fowls in the breeding pen.

Doubtless diet has an important effect upon fertility. Unless every element needed for the embryo is present, the egg will be infertile or the chick will die in the shell. There are some kinds of food that stimulate the genital organs and promote sexual activity. Raw onions chopped fine and fed in the mash twice a week are excellent during the breeding season. Clover is also a valuable food for fertility.

TO KEEP CHICKS FROM DYING IN THE SHELL.

Chicks die in the shell from two causes. The first is weak germs. The number of deaths from this cause may be reduced to a minimum by increasing the vitality of the fowls and so of the germs. The other cause is lack of moisture. Millions of chicks die every year that might have been saved with a little care.

It is a fact well known to all physiologists that a human being will suffer more and die quicker from thirst than from hunger. There are well authenticated cases where a man has gone without food for several weeks, but no case is recorded where a man has gone that length of time without water. The embryo in the shell needs a large supply of water, and Nature has arranged to meet this need by putting 78 per cent of water into the egg.

Under the hen, as in the incubator, evaporation goes steadily forward. Moisture percolates through the shell, and unless the loss is made good the embryo is deprived of water and becomes less vigorous if it does not die.

Nature takes care that when incubation goes on in accordance with her laws the eggs shall be liberally supplied with moisture. The hen in her wild state makes her nest upon the ground where the eggs come in contact with the moist earth. Every day or two the hen leaves her eggs and goes out in search of food, coming back with her feathers wet with dew. When a hen steals her nest the same thing happens. The hen comes off every now and then, burrows in the damp earth, races through the wet grass and comes back to her eggs as wet as if she had been in the river. After a while she brings out a dozen lively chicks, and her owner wonders how she does so when the hen he sets brings out only two or three.

Where a sitting hen does not have a chance to get out doors, her owner should supply moisture to make good the loss to the eggs by evaporation. Eggs should be sprinkled on the 7th and on the 14th day. Remove the hen from the nest and with a whisk broom sprinkle the eggs thoroughly with water of a temperature of 95 degrees. On the 19th day the eggs should be given a bath. Fill a pail with water of the temperature of 95 degrees, and after it has become still drop the eggs in it one by one, letting them remain from one to three minutes. If there is a lively chick in the egg in a minute or two it will begin to bob up and down as a float does on the water when a fish is nibbling at the bait below. Take the egg out and put it back in the nest,

wiping it with a towel if it is winter but letting the surplus water remain if it is summer. In case an egg does not show any movement after being in the water three minutes—if it does not "jump"—you might as well throw it away, as it will not incubate. Chicks from eggs treated in this way come out strong and clean and make a surprising growth.

REARING THE CHICKS.

In order to get the 200-egg hen we must start with the chicks. They must come of good stock. Men do not gather grapes of thorns or figs of thistles. The eggs for hatching should be of medium size, symmetrical in shape, and free from excrescences. They should be handled as little as possible after being gathered and during incubation. It is a good plan to test the eggs on the seventh day and remove the infertile ones. These will be perfectly clear. If hens are used for hatching it is a good plan to lift them up carefully from time to time to see that no eggs are broken under them. The larger varieties are greater offenders in this respect than the smaller ones, as they are more clumsy. In case eggs are broken they should at once be removed, and the soiled eggs in the nest washed in blood-warm water and wiped dry with a soft cloth; for if this is not done the pores in the shells will become clogged and the chicks inside die of suffocation.

I suppose there is no subject on which poultrymen differ so much as on the proper feeding and care of chicks. Some prescribe a bill-of-fare as elaborate as that of a first-class hotel, while others recommend a more moderate menu. I know a man who raises chicks with good success who feeds nothing but dry Indian meal. I know another who feeds nothing but cracked corn. Another who feeds whole wheat. The fact is, I suspect, there is a wide range of diet suitable for healthy chicks, and no hard and fast rule can be laid down.

REARING THE CHICKS: CRACKED CORN METHOD.

The first method I recommend is what I call the cracked corn method. It is for those whose time is limited, who wish to raise healthy chicks with as little trouble as possible. It consists in keeping fine cracked corn before the chicks all the time, and letting them help themselves whenever they feel like it. Some of the finest chicks I have ever seen have been raised in this way. To the success of this method it is absolutely essential that cool,

fresh water be kept before the chicks all the time, and that they have free range out-of-doors. This is the method for farmers who have little time to bother with chicks, but who wish to raise enough to replenish their flock. Chicks brought up in this way are seldom troubled with sickness, and make rapid growth.

REARING THE CHICKS: AUTHOR'S METHOD.

My own method of rearing chicks is somewhat peculiar. I do not know that I would recommend it to all. I do not know that I would practice it myself under different circumstances. But it works well, and is very simple. I seldom lose a chick, and my chicks make rapid growth and are strong and vigorous.

I live in a region where rocks abound, and where gravel may be had for little more than the cost of hauling. My brooder house is in a wet place, and to make it perfectly dry I filled in below the sills with two feet of rocks, and then filled the chinks between the rocks with coarse gravel. I then put on as a top layer six inches of fine gravel. The floor of the brooder house now is always dry, and there is a fine chance for chicks to scratch and burrow.

I do not disturb the hen or chickens for 24 hours after the hatch. Then I lift the hen off the nest, put the chickens in a basket, take the hen under my left arm, and convey the hen and chicks to the brooder house where I set them down and feed them. For the first meal I give a mash made of two parts Indian meal and one of bran, mixed up with boiling water, and brought to a granulated (not sloppy) state. Into the mash I put a pinch of salt and a sprinkling of black pepper. After the chicks have eaten what they want I scrape back what is left into the dish, sprinkle plenty of fine cracked corn on the floor and go away. I do not look in upon the chicks until the next morning, when I give them another meal of mash and see that they have plenty of fine cracked corn to last them until I come again. I ought to add that I am careful to keep cool fresh water in the brooder house all the time. My fountain is a lard pail inverted in a shallow tin dish. Near the rim of the pail I bore half a dozen little holes with an awl, through which the water constantly percolates.

Under my system I feed a mash once a day. After the first week I aim to introduce a little variety. Sometimes I chop up a few onions to stir into the mash, sometimes I put in clover meal, and sometimes a little cooked meat chopped fine. I aim to keep

plenty of fine cracked corn on the floor of the brooder house all the time, so that the chicks can help themselves whenever they feel like it.

I keep the brooder house filled with chicks and hens, keeping chicks of the same age in the same pen. By watching the hens a little I soon discover which ones get along together, and remove the timid or troublesome ones at night. It may be that when I start I will have half a dozen hens and 60 chickens in one compartment, and will gradually remove the hens until only two or three are left. I am not particular that each chick shall find its own mother. It will find some mother, and that is enough.

I keep the chicks in this brooder house until the weather is warm and dry. Then I let them out upon the ground. In the house they are safe from hawks, rats, cats and other predatory creatures, and make rapid growth. I keep the house scrupulously clean. The top of the gravel is removed every few days. I use my sprayer freely, and throw in air-slacked lime. My method may be called the "lazy man's method," but it works like a charm and takes but little time.

REARING THE CHICKS: FARM POULTRY METHOD.

The third method I call the FARM POULTRY method, as it is recommended by that paper. "For the first 24 hours after hatching chicks do not need food, as the portion of yolk that has just been taken into the abdomen has not been fully digested; and then too the chick should get accustomed to the fact that he has 'just been borned' before his little crop is started on its seldom empty journey through life. When the hatch comes off let the little fellows have a drink of pure fresh water (not too cold); this invigorates them and helps clear the digestive organs of the waste from digested yolk.

"The first food should be bread crumbs and hard boiled egg, or johnnycake. To each pint of food half an even teaspoonful of Sheridan's Condition Powder should be added, and also a sprinkling of chicken grit. The food for the first few weeks should be johnnycake, rolled oats, coarse oatmeal, and bread or cracker crumbs. A little well cooked meat finely minced three times a week, and a liberal supply of fresh green food, grit, charcoal, and pure water, are essential to health. Twice a week they should get the Condition Powder with their food, preferably mixed with the johnnycake or bread crumbs, and moistened with

milk. This will insure a good digestion, and a good digestion is a safeguard against disease.

"When the chicks get to be six weeks old they should have a cooked mash for supper six nights in the week, and Sheridan's Powder should be given in this mash twice a week in the proportion of a heaping teaspoonful to each quart of dry meal in the mash. As the chicks grow the amount may be slowly increased, until the proportion is two teaspoonfuls to each quart of dry ground grain. For other food they should have hulled oats, wheat and a little cracked corn—fresh green food always.

"From the first have a litter of chaff or cut clover and sand for the chicks to scratch in; exercise is essential to good digestion. Give them sunny quarters, and provide a shelter in case the sun is too hot, and for protection in stormy weather. When warm weather comes be sure that they can have plenty of freedom and exercise on the green bosom of 'Old Mother Earth.' Keep them busy, happy and hungry. Be careful not to overfeed. If you must coop them up, make the coops large enough to give them plenty of room to exercise and grow. Change the location of such coops often, to give them fresh ground to run on."

WHEN TO HATCH THE CHICKS.

Chicks of the Asiatic breeds should be hatched in March, chicks of the American breeds in April, and chicks of the Mediterranean breeds in May.

TO START PULLETS TO LAYING IN THE FALL.

Sometimes pullets are slow about starting in to lay in the fall. They were hatched out early, and are big enough to lay; but week after week goes by and no eggs reward their owner's patient care. I do not believe it is best to hurry Nature, and to develop precocity at the expense of size and vigor; but sometimes Nature may be assisted to advantage.

It is a well-known physiological fact that a change is often beneficial to the health. The benefit from a summer vacation does not come from the rest one takes,—for often one is more active than one would be at home,—but from the change of air and scene and from the new impressions that come to the mind. I have sometimes stimulated egg production in a flock of hens by shifting them from one pen to another or by making some slight change in their bill of fare.

Where pullets are old enough to lay and do not lay they need some slight shock or change to start them in. The majority of those who rear chickens give them free range, or as near free range as possible, during the summer months. This is correct. But after they get their growth their energies need to be directed to egg production and not run off in useless exercise. Accordingly as early as October 1st—if not before—the pullets should be taken from the range and put into the laying houses. Here their range should be restricted. More meat meal or ground bone may be advantageously introduced into their ration, and a stimulant may be given in the shape of cayenne pepper or Sheridan's Condition Powder. This treatment soon induces egg production, if they are of the "bred-to-lay" kind.

HOW AND WHERE TO MARKET THE PRODUCT.

Producing the eggs and rearing the chicks form but a part, and perhaps the smallest part, of the poultryman's business. In order to make money he must market the product to the best advantage. It is here, I am convinced, that the majority of poultrymen fail. They are not good business men. They work hard enough, but do not calculate closely and do not sell at the right time or at the right place. In these days when competition is so close and the margin for profit so narrow, the difference between profit and loss in the poultry business may consist in the manner in which the product is put on the market.

The man who keeps but a few hens and does not make poultry raising his principal occupation, will probably do better to sell his eggs and poultry to his regular grocer than to hunt up private customers. It is true that he may receive a cent or two a dozen more if he sells at houses, but this is more than offset by the loss in time. The grocer is not so particular about his eggs, so long as they are fresh, as is the private customer, and will take eggs of all sizes and colors. It is true he does not wish to pay in cash, but the profit on his goods is about the only profit he makes on the transaction; for the grocer is often compelled to sell eggs for just what he gave for them. The grocers are the great buyers of eggs throughout the land.

The man who keeps hens on a larger scale, and who wants to make the most out of the business with the least trouble, will do well to make an arrangement with a city grocer to ship him a certain number of cases each week throughout the year. The poultryman should go to the city and see the grocer personally.

The chances are he will get an order. This is far more profitable than selling to the local grocer. In the town where I live I have never known eggs to go above 30 cents a dozen, and they remain at this figure but a short time; while in the cities to the south of us they sometimes sell as high as 45 or 50 cents.

The poultryman who produces a gilt-edged product can often market to private customers to advantage. The hotels will take a limited number of fancy fresh eggs. They do not take so many as one would think, because in cooking they use cold storage eggs. Clubs are good customers, and will pay a fancy price for a fancy article. Druggists use a large number of brown eggs in connection with their soda trade, and will often pay a good price for fresh eggs of good color. There are private families that will gladly pay the poultryman the same price they have to pay for eggs at the store, and pay in cash. The advantage of having private customers is, that one can sell them beside eggs, poultry, vegetables, cream, berries and other products of the farm and garden.

How may these private customers be obtained? I know of no better way than by advertising. A card in the local paper or a few hundred postals sent through the mails will be sure to bring results. I believe in postal card advertising, and give an idea for a card to send out.

FANCY FRESH EGGS
DELIVERED AT YOUR DOOR.

Why go to the store and take your chances on eggs which may or may not be fresh when you can have strictly fresh eggs delivered at your door twice a week? Every egg dated and guaranteed. A postal card will bring me.

EDGAR L. WARREN,
Pleasant View,
WOLFEBORO, N. H.

The town where I live is a noted summer resort, hundreds of people coming here every season. The shore of the lake is dotted with camps and cottages. So far as I know there is not a farmer in town who advertises. A card like this sent to campers would be heard from:

To Campers.

One of the delights of going into the country is to have strictly fresh eggs, vegetables and cream. I make it a point to supply campers with fancy fresh eggs, broilers and roasters, cream, berries, fruits and early vegetables. I deliver every morning. A postal will bring me.

EDGAR L. WARREN,
Pleasant View,
WOLFEBORO, N. H.

The poultryman who keeps from 300 to 500 head of laying stock will have a good deal of poultry to dispose of, especially if he follows my advice in this booklet to keep pullets, principally, for layers. It will be quite a problem to dispose of this stock to the best advantage. In passing I would remark that the poultryman should keep his own table well supplied. Plump and juicy broilers and roasters are just as good for him as they are for any one else. There is no reason why the poultryman's table should not rejoice once a week with broilers or roasters. If the poultryman uses an incubator he can begin to reduce his stock in the spring. There is no better time to kill a hen than when she wants to sit, for then she is sure to be plump and in good condition. During the summer there is in most towns a good market for poultry. The poultryman should steadily cull from his flock, and about moulting time have a grand "round up," selling the fowls for what they will bring,—except those that he wishes to

keep over for breeders. Quite a number of cockerels may be disposed of to the farmers at a dollar apiece, if a postal card like this is sent them:

Choice Cockerels Cheap.

I have a number of choice White Wyandotte cockerels, which I will sell for one dollar each if taken at once. If bought out of town cockerels like these would cost from three to five dollars. Introduce new blood and grade up your flock by purchasing a cockerel of my heavy-laying strain. First come first served.

EDGAR L. WARREN,
Pleasant View,
WOLFEBORO, N. H.

Before taking leave of the subject I trust the reader will pardon me if I give a few words of advice. Be strictly honest. The poultry business offers opportunities for deception. Beware how you yield to them. Let it be your ambition to be known as "the honest poultryman." Date and guarantee every egg you sell. Be neat in your person, and have your goods fresh and attractive. Be pleasant and accommodating. Make all the friends you can without sacrifice of principle, for it is with his friends that a man does business and not with his enemies.

KILLING AND DRESSING FOWLS FOR MARKET.

One of the most disagreeable tasks the poultryman has to perform is to kill and dress his fowls. It seems heartless after making a bird a pet and gaining its confidence to take its life. Still it has to be done. The Creator of the universe, in putting man at the head of the animal kingdom, gave him dominion over fish, fowl, cattle and all creeping things. Man has no right to torture or maltreat any living thing; but he does have the right, under certain circumstances, to take life. It is probable that the animal escapes what to man is the most distressing feature of the whole situation, the dread of death. It enjoys every moment of

its existence, and the agony of dissolution is brief. It is far more humane for the poultryman to kill his own fowls, even though they have been his pets, than to consign them to the tender mercies of the commission merchant; for in the former case the fowls are not packed in close and stuffy coops, jolted over stone pavements in express wagons, left to suffer for food and drink. As fowls must be killed it is well to know how to kill them humanely and expeditiously, and the following instructions should be committed to memory.

1. Take the bird from the roost at night, 36 hours before it is to be killed, and shut it up in comfortable quarters. The next morning give it a good breakfast, but nothing more to eat after this until it is killed. Let it have all the water it will drink. The water will add greatly to the fowl's comfort and assist in evacuating the bowels. The confinement is for the purpose of having the fowl at hand when it is wanted and of emptying the crop.

2. Suspend the fowl by the feet at a convenient height with a soft cord, the upper end of which is secured to a hook or nail in the ceiling or beam overhead.

3. Lock the wings together behind the back, to prevent flapping. Do this carefully, so that they will not be dislocated.

4. Take the tip of the wings in the left hand, and with the right strike the fowl a smart blow on the head with a stick or cudgel. Strike hard enough to produce concussion of the brain and unconsciousness.

5. Grasp the fowl by the comb or by the feathers at the back of the head with the left hand, and with the right insert the blade of a sharp knife in the neck just back of the ear lobe, on the under side of the neck bone and parallel with it. Run the blade clear through the neck. When you withdraw the blade twist it to right angles with the neck bone, severing the artery in the throat, and causing the blood to flow profusely.

6. Begin to pluck immediately. Pluck up the breast and sides to tail. Remove tail feathers. Unlock the wings, and strip them of long feathers. Remove feathers from around vent. Pluck the feathers from back. Finish plucking. If done quickly the feathers will come out easily and the skin will not be torn. The bird should be entirely denuded of feathers in 10 minutes. In case rents are made sew them up neatly with white thread.

7. If the fowl is to be drawn, with a sharp knife cut a slit about an inch long back of the vent and parallel with it, through which insert index finger, hooking it into the intestines.

Remove intestines. The lower end of the intestines and the egg sac may be removed by enlarging the slit in the shape of a half circle, until it joins the ends of the vent. This will make a round hole about the size of a silver half dollar. After removing the intestines cut off the fowl's head, then draw back the skin and take off about an inch of the neck bone, pull the skin forward and tie.

8. "For the Boston and New England markets the poultry should be picked perfectly clean. For the New York markets the tip feathers of the wings are left on. Do not singe the bodies for the purpose of removing any down or hair, as the heat from the flame will give them an oily and unsightly appearance."

9. "Plumping is recommended by some dealers, and consists in dipping the carcass as soon as thoroughly picked for 10 seconds in water nearly or quite boiling hot, and then immediately into ice-cold water. This makes the meat look plump and fat, considerably improving its appearance."

10. "The laws of Massachusetts and New York do not require poultry to be drawn. In the former State however the *crop* must be drawn if there is food in it at the time of killing. Custom, which is quite as potent as statute law, requires that poultry marketed in Massachusetts be drawn; and carefully drawn poultry will sell so much more readily and for so much better prices, that it pays well to comply with this demand."

PACKING AND SHIPPING.

"Carefully sew up all rents or torn places on the skin, wash clean in cool water, wipe dry and hang in a cool place until the animal heat is entirely out, before packing. Pack in clean barrels or boxes with clean straw, as follows: first a thin layer of straw and then a layer of poultry in the same posture in which they roost, then a layer of straw and another of poultry, and so on until the barrel or box is quite full, finishing with a layer of straw which should be tucked firmly into any crevices in the sides. Nail the corners or heads on securely, and mark carefully with the name and address of the dealer to whom you ship, not forgetting your name and address as shipper; and notify the dealer by postal or letter that you have shipped him one or more boxes or barrels of dressed poultry by freight or express, as the case may be. Always take a receipt from the freight or express agent, and ship so as to reach the market not later than Friday. Any com-

mission merchant will send quotations on application; but the price you obtain will depend upon the condition of the birds upon arrival and the quality, common fowls never selling so well as pure-bred or grades."

TO SCALD A FOWL.

Where the fowl is to be eaten at home, or where it is sold for immediate consumption, many prefer to remove the feathers by scalding. There is a right and a wrong way to do this. The right way is as follows: Kill in the manner described in the preceding section. Begin to pluck as soon as the blood starts, and continue until it stops flowing. Have at hand a pail of hot water, —just below the boiling point,—and into this dip the fowl, taking it out as soon as possible. Let the water drip from the feathers, and then dip the fowl again. The feathers will come off easily, and the fowl will keep several days without discoloration. To sum up: *Dry pick as long as the blood flows, and then get the fowl in and out of the water as quickly as possible.*

TO KEEP EGGS A YEAR.

When Li Hung Chang, the Chinese envoy, was in this country a few years ago, he brought along among other delicacies eggs packed in clay, which were said to be as fresh when the mould was broken as if laid the day before. It is probable that the Chinese, those curious people, could teach us many things about poultry culture which it would be profitable to learn. Certainly they have a method of preserving eggs as simple as it is efficacious.

To keep eggs a year, or a longer time, two things are necessary: 1. To exclude all germs of life from within. 2. To exclude all germs of life from without. One of these is as important as the other. The germ of life within the egg is introduced at copulation. It is a fact not generally known that eggs from flocks in which there is no male keep much longer than eggs from flocks in which one or more males are kept. There is a popular superstition that hens lay better if a cock is allowed to run with them. Such is not the case. The presence or absence of a cock in a flock of laying hens has no influence one way or the other upon egg production. After the breeding season is over males should be killed, or shut up in a pen by themselves. The practice that many farmers have of allowing half a dozen

males to run with their hens is one that cannot be defended from an economic or æsthetic standpoint.

To exclude germs from without, eggs must in some way be protected from the air. Any solution that closes the pores of the shell and protects the egg from the air is good. Even such a simple method as wrapping an egg in paper will postpone decay. The two absolutely sure methods of keeping eggs a year are: 1. To coat them with vaseline and keep them in lime water. 2. To keep them in soluble glass. Eggs treated in this way will be nearly as good at the end of a year as when laid down.

There are many however who desire a simpler method, and to such I would recommend either wood ashes or salt. Wood ashes are excellent. Experiments conducted by the National Agricultural School of Germany show that eggs may be kept a year packed in wood ashes, with a loss of only 20 per cent. Wood ashes are cleanly, convenient and always at hand. Salt also is good. Use a grade of salt a little coarser than table salt,—what is called Turk's Island salt. Pack the eggs in a stone jar. Put in first a layer of salt, then a layer of eggs, and so on until the jar is filled. Stand the eggs upon the small ends, and do not let them touch. Cover them completely with salt. Set the jar in a cool place. I have known eggs packed in this way to keep a year, and to be as good at the end of that time for cooking as if laid but a few days before.

EGG EATING: HOW TO PREVENT IT.

Egg eating is a vice that it is much easier to prevent than to cure. Where the eggs are gathered at frequent intervals, where the hens are supplied with plenty of material for making shells, where the hens are kept busy when not on the nests, egg eating is practically unknown.

Egg eating, like many other bad habits, is formed more by accident than by design. The hen lays a soft-shelled egg, and before she leaves the nest crushes it under her feet. Her feathers become smeared. To remove the sticky substance the hen picks at it, and discovers that it is palatable. She not only picks the particles from her feathers, but also eats the portion of the egg that remains in the shell. The knowledge spreads, and soon egg-eating is common in the flock.

The only sure cure for egg-eating is the hatchet. Before this is applied however an effort should be made to stop the vice. Two

or more china eggs should be placed in each nest, and plenty of these eggs strewn in the litter upon the floor. The nest should be in a dark place, and should be so arranged that it is difficult for the hen to get at the egg after she has laid. A nail keg makes an excellent nest for egg-eating hens. I have known men to make a double-decked nest, so that the egg after being laid would drop through a small hole into the receptacle below. Raw salt pork, chopped fine, is recommended for egg-eating hens; but the best thing is never to allow them to contract the vice.

THE FARMER'S HENS.

There is no man better situated to keep poultry at a profit than the farmer. His hens need not be restricted to narrow runs, but the greater part of the year may have the freedom of the fields. The waste of the farm, and what the hens themselves pick up on the range, goes a long way towards their support. It would seem that if anyone could make money on hens the farmer is the man. And yet one hears on every hand among farmers the complaint that poultry keeping does not pay. It is safe to say that the farmer might make two dollars off his hens where he now makes one, and it is the purpose of this section to show him how to do it.

1. There should be a better classification. The average farmer's flock is made up of fowls of all breeds and varieties. There are Leghorns, Plymouth Rocks, Light Brahmas, and hens whose ancestry the most skillful genealogist could not determine. This is a mistake. The different breeds require different treatment. A Leghorn will keep at work and lay if confined in a space two feet by four. A Light Brahma needs to be compelled to work, or she will take on fat and be worthless for egg production. It is much better and more profitable to keep but one variety, and to make a careful study of that variety.

There should be a better classification in respect to sex. There is no sense in keeping half-a-dozen roosters running with a flock, to eat their heads off, to worry the hens, and to continually fight one with another. One rooster is enough. When the chickens are 12 weeks old the males should be separated from the females and put by themselves. There should be off in the fields a house, which can be locked up nights, where the cockerels can have their headquarters. They will do much better if separated from the pullets, and they will get half their living off grasshoppers and bugs.

There should be a better classification in respect to age. Pullets and old hens should not be allowed to run together. If the hens are fed as generously as the pullets they will get fat and stop laying. The number of old hens should be reduced. I have known farmers to keep hens until they were six or seven years old. I believe that pullets are the great egg producers and that it is better to renew the flock every year. But practically this is not always possible. Under no circumstances however should hens be kept over two years, if profit is a consideration.

2. The farmer's hens should be better housed. Of all the creatures on the farm the hen is the most neglected. The pig has his pen in which he is supreme, the cow has her warm and comfortable tie-up, the horse has his stall; but the hen is often left to roost on the great beams of the barn, or thrust down into that ill-smelling dungeon, the barn cellar, or compelled to live in a house that is swarming with lice. The farmer neglects his little feathered friend, and then complains because she does not keep him supplied with eggs at all seasons of the year.

3. The farmer should get his chickens out earlier. Under favorable conditions it takes from seven to eight months for a pullet to mature. Where her growth is checked by cold weather it takes longer. It is capable of mathematical demonstration therefore, that if a farmer wants eggs in the fall when they bring the highest price he must hatch his chickens early. There is another advantage in hatching chickens early; namely, the cockerels may be sold for broilers. In July and August in the town where I live the price for broilers is 25 cents a pound, and the supply does not equal the demand. At Thanksgiving the market is oversupplied with roasters, which can hardly be sold at 10 cents a pound.

Farmers might make use of the incubator to some extent. There is a time in the spring when the duties on the farm are light, when the farmer might get out two or three hundred chickens just as well as not.

4. The farmer should feed differently. The great staple food on the farm is corn. This does well enough in summer, when the fowls are on the range and can pick up the greater part of their living; but in the winter they need variety. Corn is a great fat-forming flesh-producing food, but does not contain all the elements needed for egg production. In another section I have given the principles that apply to feeding, and advise that these principles be thoroughly mastered.

POULTRY MANURE, AND HOW TO PRESERVE AND APPLY IT.

The town in which I live is largely an agricultural town, and has as intelligent a class of farmers as is to be found anywhere. These men spend thousands of dollars a year for commercial fertilizers. While this money is by no means wasted and while the farmers derive a certain benefit from these fertilizers, yet the benefit is by no means in proportion to the expenditure. A few simple principles well held in hand would enable them to spend their money to much better advantage.

It is probable that the soil on most of our farms contains all the elements that are needed for the production of any crop. Some of these elements are present in larger proportion than others, but all are there. These elements are liberated by the rains and frost, by ploughing and cultivation. There are certain elements however that are not liberated as fast as needed. And these elements are among the most important: they are nitrogen, potash and phosphoric acid. As they are not supplied by the soil as fast as they are needed they must be by the owner of the soil, the farmer.

The perfect fertilizer is barnyard manure. This acts upon the soil mechanically, making it lighter than it would otherwise be, and also filling it with humus. The prepossession therefore that farmers have in favor of barnyard manure is well founded, and the practice is sound to consume the crop as far as possible at home and apply the refuse to the soil. But barnyard manure is somewhat slow in its operation. The crop needs in addition a stimulant. This it is the province of commercial fertilizers or their equivalent to furnish.

Hen manure is a highly stimulating manure. It is also a rich plant food. Hen manure is highly concentrated. It is more than twice as valuable as sheep or hog manure, and more than three times as valuable as ordinary stable manure, as the following table will show:

	Nitrogen.	Phosphoric Acid.	Potash.	Value per Ton.
Sheep.....	0.768	0.391	0.591	$3.30
Pigs.....	0.840	0.390	0.320	3.29
Cows.....	0.426	0.290	0.440	2.02
Horses.....	0.490	0.260	0.480	2.21
Hen Manure.....	0.800 to 2.000	0.500 to 2.000	0.800 to 0.900	7.07

Hen manure is so powerful that great care must be taken in applying it. It should never be allowed to come into direct contact with the roots of the growing plant. When applied in the hill it should be well mixed with the soil.

Hen manure supplies nitrogen in large quantities in the form of ammonia, but ammonia being a highly volatile product is rapidly dissipated. The problem of the poultrymen therefore in dealing with hen manure is to find some substance that will fix the ammonia. Sifted earth is not good, for it is apt to contain bacteria which act destructively on the ammonia compounds. Wood ashes are worse than nothing, for they do not hold ammonia, but drive it off by their caustic alkaline properties.

The best thing I have found to preserve the ammonia in hen manure is gypsum or land plaster, which may be bought for 50 cents per 100 pounds. Scatter a few handfuls of plaster over the droppings before you remove them in the morning, and see that it is thoroughly incorporated. The result is a compound as valuable as any commercial fertilizer. The droppings from a fowl in one year, when treated in this way, are worth one-half what it costs to feed her.

Kainit may be substituted for plaster in case a manure particularly rich in potash is wanted, and acid phosphate may be substituted for a rich phosphatic manure. Either of these substances will fix the ammonia, and the combination is a special fertilizer of great value.

WHY THE POULTRY BUSINESS IS NOT LIKELY TO BE OVERDONE.

Every now and then I come across a communication in some newspaper from an anxious subscriber asking if there is not a likelihood that the poultry business will be overdone. The answer usually given is, that so long as we import into the United States several million dollars worth of eggs and poultry each year there is no danger. With all due respect for editorial sagacity, (and I have been an editor myself), it does not seem to me that this answer is entirely satisfactory. The poultry products that are imported into the United States come largely from that portion of Canada that is contiguous to our own territory, and that for purposes of commerce is practically a part of our own country. The causes that operate to produce an increase of eggs and poultry on one side of the border operate to produce a similar increase on the other. If the poultry business is not likely to be overdone it must be for other and better reasons.

That there is a *possibility* that the poultry business may be overdone, is a proposition that I think no one will undertake seriously to controvert. The great problem of the present day in manufacturing and commercial circles is the problem of consumption. We produce more goods than we can sell, at least more goods than the home market requires. Why all this talk about expansion and the "open door?" Because we have come to a time in our industrial history when here in the United States we can produce in eight months as much as the people can consume in twelve, and so we need an outlet for our surplus. We must have wider markets, or there will be low prices, shut downs, congestion and general uncertainty in the business world.

Why has farming been so unprofitable in New England? Why are there so many abandoned farms in this section? Simply because of Western competition. We have not been able on our rocky, worn-out soil to compete with the virgin acres of the West.

That there is a possibility that the poultry business may be overdone follows from these analogies. That there has been a large increase in poultry raising in the past 10 or 15 years is patent to everyone. The State census of Massachusetts shows that in the decade from 1885 to 1895 the poultry products of the State increased 73.77 per cent. What is true of Massachusetts is true more or less of the whole country. The profitableness of

poultry keeping has been preached so assiduously by the agricultural and the poultry press, that about every third man one sees thinks of starting a poultry farm. Is not the business likely to be overdone and had not a careful man better keep out of it?

One reason why the poultry business is not likely to be overdone lies in the very nature of the business itself. There is no business requiring more constant care and intelligent supervision.

The egg is the surplus which the hen throws off after all the needs of her system have been supplied, the excess over and above what is needed to repair waste and keep her in perfect health. In order to produce eggs a hen must be of proper age, well nourished, in the best of health and protected from extremes of temperature. These conditions cannot be secured without constant care and attention. The absence of any one of these conditions means the lowering of the egg record. The majority of men who engage in the poultry business will not devote the time and attention to it that is necessary, and consequently do not succeed. The poultry business is a business that cannot be entrusted wholly to the care of subordinates. It is almost impossible to get a salaried man who has the intelligence and executive ability to successfully supervise a large plant. Capitalists have turned their attention to poultry more than once as to a field that offered rich returns, only to find that they had underestimated the difficulties; and, after sinking thousands of dollars, have retired in disgust. The poultry business is the one business that cannot be conducted at profit on an enormous scale. Consequently there will always be room for careful men with some little capital.

Another reason why the poultry business is not likely to be overdone lies in the fact that the demand for eggs and poultry is constantly on the increase.

The United States doubles in population every 30 years. The present population is not far from 75,000,000, and it will be 150,000,000 within the lifetime of many who read this book. How shall this great multitude be fed? The production of cereals and vegetables can be increased indefinitely, but not the production of beef. The great plains of the West and Southwest, over which cattle formerly ranged in countless numbers, have been cut up into ranches and farms. There has been a sharp advance in the price of all kinds of meats, and the advance is likely to be permanent. Fishermen return each year with smaller fares. The American people will be driven by the failure of other food supplies to an increased consumption of eggs and poultry. It is

probable that the present population could consume four times the eggs and poultry it now consumes, were the prices lower. The increase in population and the increase in consumption of eggs and poultry, will make a good market for the poultryman's products for years to come, so there is no need for anxiety.

QUALIFICATIONS FOR A SUCCESSFUL POULTRY MAN.

What are the qualifications for a successful poultryman? What equipment should a man have who wishes to engage in poultry raising as a pursuit? First and foremost I would mention a love for the business. The poultry business is made up of innumerable details. While the work is not hard yet there are a thousand and one things to look after. There is no creature with which man has to do that so quickly responds to good care and so quickly falls back when neglected as the hen. The ideal poultryman is the man who finds his reward in his work rather than in what the work brings in. He should have a real interest in his hens, should like to be with them and study them, should be sorry when the time comes that he must lock up for the night, should be glad when the time comes that he can let them out in the morning. The reason why women do better with hens than men is because they have such a liking for them. Second, the man who would succeed in the poultry business should have a realization in advance of the difficulties he will have to meet. It is easy to sit down with pencil and paper and figure out a profit, but it is not so easy to make the profit materialize. The poultryman's path is not strewn with roses, by any means. From the day the chicks emerge peeping from the shell to the day when the fowls are dressed and sent to market, he has to fight cats, rats, hawks, skunks, foxes, lice, disease, thieves and innumerable other enemies. There are times when the courage of the most enthusiastic gives way, and he would be glad to sell out at a decided discount. Third, the poultryman needs capital. He does not need so much capital as he would to start a bank or open a department store, but the more he has the better. The man with cash can buy to better advantage, and hold his stock until it can be sold at a profit. There are weeks when there is little or nothing coming in, but hens have to be fed just the same. I know men in the poultry business who are steadily losing money, and if they were not backed by a bank account would have to quit. Fourth, the poultryman must have some business ability.

He must know how to plan his work, how to buy and sell, how to keep accounts. He need not be a college graduate, but he must not be an ignoramus. If he is he will soon come to the end of his career.

What rewards may a well-equipped poultryman expect? Not a fortune. You can count on your fingers, almost, the men who have made fortunes in the poultry business. And these men have made their money by selling birds and eggs to breeders rather than by catering to the regular trade. But a careful, industrious man, one who has a real liking for the work and has gone into it intelligently, may reasonably expect a good living, a pleasant home, health, and the independence that comes from being one's own master. If I were a workingman I would infinitely rather have the free healthful life of the poultry farm than to work in the heated shoe shop under the eye of a domineering boss, or to put in 12 to 16 hours a day on a trolley car, or to be a clerk in a great department store where I could not say my soul was my own.

WHY SO MANY FAILURES?

The poultry business has its due share of failures. Within a few miles of where I write there are several plants that have been converted to other uses, or, abandoned, have fallen into decay. Every now and then I meet a man who has retired from poultry keeping in disgust, and who consigns the business and everything connected with it to the regions of unutterable woe.

Certainly it would seem to an onlooker that there is as good a chance for success in the poultry business as in any other. The poultryman deals in a product that always sells and sells for cash. There is never a time when eggs do not command some market. It would seem a very easy matter for a poultryman to arrange his sales and expenses so that there will be a good margin of profit. The manufacturer of eggs has an advantage over other manufacturers, in that he can dispose of his worn-out machinery—the laying stock—for about what it cost to install it. Why then are there so many failures?

1. One reason is that men rush into the business without experience. Other occupations require a long apprenticeship. In law, medicine or the ministry a man has to study for years before he is admitted to his profession. In manufacturing a man must be familiar with every detail, and some of the most successful manufacturers in the country came up from the workman's

bench. In merchandising or banking it takes years to come to the front. And yet men think they can go into the poultry business without money, without experience, and make a success from the start!

I know a young man who came east from a great city to go into the poultry business. He was better off than most poultrymen in that he had the promise at the outset of a cash market for all the eggs he could produce, up to 1,000 dozen a day. It was fall when this young man began operations. He had no stock; and, instead of picking up stock among the neighboring farmers as best he could, sent away for chickens that had just been hatched. They were a nice-looking lot, and with care in due time would have developed into good layers. But he had no brooders, and the only way the little things could keep warm was by huddling together. Their growth was checked, and they never made strong, sturdy fowls. Some of them never laid an egg. The young man who came east with a contract in his pocket to furnish 1,000 dozen of eggs a day, actually did not get enough for his own table and had to buy them of his neighbors!

It is surprising how jauntily men assume that they know all there is to know about the poultry business, and that there is nothing for them to learn. Some time ago I was called upon to advise some young men who had gone into the poultry business and were not making a success of it. They were honest, hard-working young fellows, had a good market for their eggs and stock, and yet their ledger showed a balance on the wrong side. "What poultry papers do you take?" I asked. "We take none now," was the reply. "The poultry papers have the same things over and over again; we can learn nothing from them."

No matter how experienced a man may be it pays him to take poultry papers, and to take a good many of them. If he gets a new idea once in six months he will be amply repaid. Then it is worth something to keep up one's enthusiasm, without which the work drags so that one is tempted to give it up.

The beauty of the poultry business is that one can go into it in a small way at first, and learn it while he relies upon his regular occupation to give him his daily bread. No man should expect to make poultry keeping his sole support until he has mastered it in every detail. Then the chances of failure are reduced to a minimum.

2. Another reason why there are so many failures in the poultry business is poorly constructed and inconveniently

arranged plants. These young men of whom I spoke had one of the worst arranged plants I ever saw. The houses were of all sizes and were huddled together without any plan or system. The yards were too small, and the ground had become polluted with the droppings of generations of fowls. The houses were so low that as one went through them he was in constant danger of bumping his head or becoming stoop-shouldered. I was compelled to tell them that before they could hope to make a success they must completely remodel their plant,—remove the smaller houses to new soil and build over the larger ones.

Curiously enough there are two diametrically opposite errors made in the laying-out of plants. One is to make the plant too costly; the other is to make it too cheap. The former error is more likely to be made by wealthy men who engage in the business partly as a diversion; the latter by men with small capital who wish to begin as cheap as possible. Hens will lay as many eggs in a cheap house as they will in an expensive one, provided it is clean, warm, snug and well-ventilated. But it is possible to make the house so cheap that it is shabby and inconvenient.

Before the prospective poultryman lays out his plant it will pay him to visit several successful poultrymen in his neighborhood and see if he cannot learn something from them. One or two principles should be held firmly in mind. The laying stock should be in houses convenient of access, and these houses should be permanent and supplied with yards. The young stock should be on fresh ground, for the best results. Consequently their houses should be movable.

The style of house that suits me best for laying stock is 60 feet long, 12 feet wide, 6 feet posts, a roof, 9 feet from apex to ground. This house may be divided into four compartments of 15 feet each, should have 8 small windows, a door at each end, with small doors for the hens. This house rests on a stone foundation and has an earth or gravel floor. The sills are 4x4, the studding and rafters each 2x4.

Up this way the mills turn out what they call "siding," which seems to be the ideal stuff out of which to build poultry houses. Each piece of siding is of pine, $\frac{7}{8}$ of an inch thick, with a flange on either side. This flange joins into the flange on the next piece, and by matching them together a perfectly tight wall is secured. The advantage of this siding is that it can be put on almost as fast as clapboards, requires no covering except paint, is neat, and makes a warm and tight house. In this cold

climate a double wall on the north side, with the space between filled with sawdust, is advisable; but to the south of us no double wall is needed. The roof of this house should be of hemlock boards, shingled.

If I were running an egg farm and wanted to make the most money with the least work I would build houses such as I have described, and in each house I would put 100 layers. I would have no partitions in the house, and would let the birds out in one large yard. I would not have a male bird in the house, nothing but females. The work of looking after such a flock would be slight, and if I fed them right and kept them clean I should expect 150 eggs a year apiece.

3. Another reason why men fail in the poultry business is lack of good management. As a boy I learned from one of the most successful men of my acquaintance a principle that has been of great use all through life. *Never do what the majority of those about you are doing!* I try to apply this principle in the poultry business. I aim to hatch out my chickens either earlier or later than my neighbors, and to have eggs when they have none. In the summer when everybody's hens are laying and eggs are cheap and poultry dear, I begin to kill off my stock; and in the fall when eggs are worth something then my early-hatched pullets begin to get in their work.

The ideal before the manager of every great business enterprise in this country is to be independent; that is, to produce himself everything that he needs. The poultryman may apply in a small way the principles by which these great businesses are conducted. He should aim to produce on his own land, so far as possible, all he needs. He should make his hens his customers, and sell them his corn, oats and wheat instead of hunting up buyers outside. In other words he should be a manufacturer as well as a farmer, and the machines that he runs should be standard-bred, up-to-date hens.

We are on the brink of momentous changes in the poultry business. Eggs for the best trade are no longer to be produced by corn-fed hens in the old, hap-hazard way; but are to come from egg farms, scientifically conducted, with each egg dated and guaranteed. There is lots of room for the neat, honest, up-to-date poultryman!

PROFITABLE COMBINATIONS IN POULTRY CULTURE.

One of the lessons a man learns in business is, that if he is to be successful he must have no unproductive capital. The man who puts up a block of stores as an investment finds his profits seriously curtailed if one of the stores is left untenanted. The general manager of a railroad soon discovers that he must load his freight cars both ways if the road is to pay a dividend. The superintendent of a factory learns that the same boiler that generates power to run the machinery will furnish surplus steam to heat the rooms where the hands are at work and drive a dynamo for electric lighting. There is no waste in connection with a great modern business. Every by-product is utilized. Business is done on such a close margin now-a-days that all leaks must be stopped, or there will be no profits.

The up-to-date poultryman may learn a lesson from the way great business enterprises are conducted. I suppose it would be possible for a man to make a living from poultry alone. But the man who should try to do this would be at a great disadvantage. The land that he devotes to his poultry might at the same time be used for something else. The food that he purchases might in part at least be produced at home. The time that he has on his hands when his poultry do not require his attention might be devoted to some other employment. "Don't put all your eggs in one basket," is as good a rule for the poultryman as for any other man.

1. Poultry culture may to a limited extent be combined with general farming. The agricultural papers, almost without exception, urge their readers to go into poultry raising more extensively. This is a mistake. The farmer should keep better stock, and should devote more attention to his poultry; but should not attempt to go into poultry raising on a large scale, unless his farm is peculiarly adapted to it. The manufacturer of boots and shoes does not think of changing over his machinery so that he can turn out bicycles, and the superintendent of a woolen mill does not attempt to manufacture watches. Each man uses his plant for what it was intended. The section where I live is largely a grass growing, dairying country. The farms are large and are fitted up for grass-growing and cattle raising. It would be folly for farmers here to let their mowing machines rust and their fields run to weeds and sell off their cows, to engage in poultry raising.

I have known a man to do this and drop a thousand dollars a year while he was learning his lesson. As I have said, farmers should keep better stock and care for their poultry more scientifically; but not every farmer should think that it is his mission to start a poultry plant.

2. Poultry culture may be combined with market gardening. The droppings from the fowls, properly taken care of, make a valuable fertilizer; and the market gardener, as he goes his rounds, can take his eggs and poultry along at the same time. Market gardening must be carried on in the neighborhood of some city or large town, and this is a good place to dispose of the poultry product.

3. Poultry culture and bee keeping go well together. I do not know of two occupations that so fit into each other as these. The bee keeper's busy season comes in hot weather when the poultryman is not steadily employed. Bee keeping and poultry raising can be carried on in a village on a comparatively limited area. There seems to be almost a natural connection between the two occupations.

4. Poultry culture and fruit growing make a good combination. It is a well-known fact that fruit trees in poultry runs make a more vigorous growth and produce a larger yield than trees in other locations. The foliage of trees makes a grateful shade for the fowls, and the wormy fruit as it falls to the ground is eagerly devoured. The poultryman as he moves among his birds has his attention constantly called to his trees and can watch them more carefully than he could if they were away by themselves.

5. Poultry and pet stock make a good combination for a specialist. The man who engages in this business must know how to advertise. It would hardly pay him to sell his eggs and fowls at market rates, when he could sell at much larger prices for exhibition and breeding purposes. The pet stock business is growing to mammoth proportions. I have a friend, a city pastor, who receives nearly as much from the sale of his canaries as from his salary. There is a man in Indiana who raises and sells 3,000 Angora cats a year, and has 10 acres devoted to the purpose. There is another man in the same state who has a rabbit farm of 60 acres, and raises 1,000,000 rabbits annually.

WHERE THE MONEY IS MADE.

In what goes before I have endeavored to take a conservative view of the situation, and to avoid raising hopes that can never be realized. I have known too many men to drop money in the poultry business to advise anyone to go into it without careful consideration. It is easy to exaggerate the profits. In the majority of cases no books are kept and no account made for labor or food. What comes in seems like so much clear gain. If a strict account was kept it would be found that the profits in many cases were microscopic. One of the most successful practical poultrymen that I know anything about—the man who makes his hens pay him better than any other man in town—told me that last year (1899) buying and selling on the market his fowls netted him 92 cents per head. This did not include labor. By following out the methods recommended in this book—selling eggs for hatching in the spring and cockerels for breeding in the fall, by getting out his chickens early and selling broilers for 25 cents a pound—he actually did considerably better than this, his fowls netting him $1.65 apiece. Buying and selling on the market however he would have made only 92 cents. It will be seen by this that the popular impression that a hen will pay $1 a year above her keep is not far out of the way. The poultry business is no Klondike. There are a few men who make fortunes. The majority of poultrymen however make only about "day pay," say from $9 to $12 a week. There is room in the poultry business for quite a number of men to do much better than this, and to build up a business that will pay them from $1000 to $2500 a year.

Such men must cater to an entirely different trade from that catered to by the practical poultryman. They must appeal to a wider public. There are many men of means who have a love for fowls and will pay a large price for choice specimens. These are the fanciers. There are men that make nothing of paying $25 for a cock that strikes their eye, and double that sum for a prize winner at a large show. There are many others who cannot pay so much, but who do not consider $5 for a good cock at all out of the way. Eggs for hatching from choice birds sell from $2 to $5 per sitting. It will be seen that if a man can reach and hold this trade his chances for making money are better than in the more common and less amply rewarded departments of the business.

How may this trade be reached? In the first place a man must have something to sell. The public will pay a fancy price only for a fancy article. There are millions and millions of fowls in the country; and men are not going to pay $5 to $25 for a cock and $2 to $5 a sitting for eggs, when they can get as good around home for one-fifth the amount. That is, they will not pay it long. The cheat is sure in the end to be discovered and exposed. If a man expects fancy prices he must have fancy stock. He must have a strain noted for egg production, or must breed prize winners, or must have a variety that is becoming popular but is not very widely distributed as yet.

In order to reach the trade that pays one must advertise. One may have the best birds in the world, but if no one knows it one cannot expect to sell. Printer's ink is the magic key that has unlocked many a treasure house.

Advertising is an art. I am convinced as I study the poultry papers that even the great poultrymen have much to learn. Their advertisements do not catch the eye and tell the story as they ought. In many cases they are too diffuse, too general. The advertisements of breeders do not begin to compare in efficiency and attractiveness with the advertisements of manufacturers of incubators and poultry foods.

Persistency is an important quality in an advertiser. It takes time to make an impression. Herbert Spencer says that you must tell a man anything 600 times before he comprehends it. The most successful poultrymen are the men who keep hammering away. Better a two-line advertisement coming out in every issue than a much larger one that appears only once in a while.

Strikingness is another quality that an advertisement should possess. The advertisement should be so worded and displayed that it will catch the eye. The poultrymen may learn much from a study of good advertising in other lines. The advertising pages of a magazine are not the least interesting part of the periodical. See how carefully the advertisements are written, how artistically they are displayed.

Courtesy must not be forgotten. Some advertisements make me think of the methods pursued by cheap clothing dealers in large cities, who buttonhole a passer-by and try to drag him in by main strength. Take it for granted that your readers are men and women of refinement and intelligence, and try to address them as you would if you were talking with them face to face.

The way to prepare an advertisement is first to think out

carefully what you want to say, and then write it down. Go over what you have written and strike out every unnecessary word. Condense, condense, condense! Go over what remains and try to arrange it in the most striking way. The longest and costliest advertisement is not necessarily the one that draws the most trade. A four-line advertisement, running six times, once brought me in $500 worth of orders.

The man who does not have the capital to engage in the business on a large scale, or who does not feel competent to compete with breeders of established reputation, may largely increase his profits by imitating their methods within a limited area. Farmers are waking up to the importance of keeping thoroughbred stock. The average farmer does not feel that he can afford to pay $2 or even $1 for a sitting of eggs, but he will gladly pay 50 cents. The man who introduces a new and promising variety into his neighborhood, or who has a strain of any established breed noted for egg production, can count on a large sale of eggs for hatching around home. It is more profitable to sell eggs to the farmers for 50 cents a sitting than to sell them for double that sum to customers out of town; for in the latter case there is the expense for advertising and baskets, the time consumed in packing the eggs and in correspondence. The farmers will come to the house to get what they want. They hatch way into summer, and their trade is worth having. The man I referred to in the opening paragraph of this section as realizing $1.65 per head from his hens in 1899, in the hatching season sells nearly all the eggs he can spare to farmers for 50 cents a sitting.

POINTS TO KEEP IN MIND.

In this book I have told the reader how to get 200 eggs a year apiece from his hens. But unless he studies his flock closely and modifies the rules to suit his individual case he will not succeed. There are five points that he should keep constantly in mind:

1. Do not let the hens get too fat. If the hens huddle together in a group and seem lazy and apathetic the ration is too rich and must be reduced. If when you lift them the hens feel like "lumps of lead," or if they lay small or soft-shelled eggs, they are too fat and must be reduced in weight. The ration I recommend in this book is for hens in confinement. Where hens have free range the noon feed should be omitted altogether, and the morning feed should be light if given at all.

2. Watch the droppings. These are a good key to the health of the fowls. In this book I have recommended a much larger proportion of ground bone and meat than is generally advised, and it may be that so much meat and ground bone will induce diarrhœa. If so the proportion should for a while be reduced.

3. Be on the lookout for lice. Lice are more likely to trouble the male than the female, for the reason that the male is not so particular about taking his bath.

4. See that your fowls are comfortable and in good health. The egg is the surplus after all the needs of the fowl's constitution have been supplied. It stands to reason therefore that eggs cannot be produced in great quantities unless the hens are comfortable and in good health.

5. Be gentle with your birds. The hen is naturally timid and easily scared. When kindly treated however she becomes tame. Much of the pleasure in keeping fowls comes from having them so tame that they will let their owner work among them and even handle them at his will. One should never lose his temper, no matter how great the provocation. The hen is not a reasoning creature and often sorely tries her owner's patience. But if he never allows himself to get angry or treat her unkindly no matter what she may do, poultry keeping becomes not only a source of pleasure and profit but a means of moral discipline not to be despised.

CONCLUSION.

In preparing this book I have been governed by two considerations: economy, practicability. By economy I mean not only frugality in the use of money, but also frugality in the use of time. I am aware that the great majority of those who keep fowls are not able to devote their whole time to the business, but must combine poultry keeping with other pursuits. I have had this class in mind in writing this book, and have endeavored to show how the maximum of profit may be obtained with the minimum of effort. Every statement in the book has been tested by actual experience, and may be relied upon implicitly. I expect to learn as long as I live and to modify details from time to time, but never expect to depart radically from the principles laid down in these pages.

ARE YOU THINKING OF

STARTING A POULTRY PLANT?

Then you must be interested in the price of building materials.

We live in a heavily-timbered region, not far from the great markets, consequently we can make low prices on lumber, while freights are moderate.

Our matched pine boarding or siding is just the stuff for poultry houses. The pieces are grooved together, so that rain and wind cannot get in. They can be put on as fast as clapboards.

South of Boston a house built of matched pine boarding or siding requires no shingles, clapboards or roofing paper. North of Boston the house should have a double wall on the cold side, or be lined.

Up this way scores of summer cottages and camps are built of our matched pine.

Poultry houses can be built for about one dollar a running foot.

Do you know of any cheaper or more convenient building material?

Why not write us?

S. W. CLOW & CO.,

Wolfeboro, N. H.